MUSIC THEORY

FROM ABSOLUTE BEGINNER TO EXPERT

THE ULTIMATE STEP-BY-STEP GUIDE TO UNDERSTANDING AND LEARNING MUSIC THEORY EFFORTLESSLY

UPDATED AND EXPANDED

NICOLAS CARTER

Best Seller

&RS\ULJKW j E\ 1LFRODV &DUWHU
$OO 5LJKWV 5HVHUYHG

7KLV GRFXPHQW LV OLFHQVHG IRU \RXU SHUVRQDO HQMR\PHQW RQO\ ,W LV JHDUHG WRZDUG SURYLGLQJ H[DFW DQG UHOLDEOH LQIRUPDWLRQ LQ UHJDUG WR WKH FRYHUHG WRSLF 7KH SUHVHQWDWLRQ RI WKH LQIRUPDWLRQ LV ZLWKRXW FRQWUDFW RU DQ\ WSH RI JXDUDQWHH DVVXUDQFH

([FHSW IRU WKH TXRWDWLRQ RI VPDOO SDVVDJHV IRU WKH SXUSRVHV RI FULWLFLVP RU UHYLHZ QR SDUW RI WKLV SXEOLFDWLRQ PD\ EH UHSURGXFHG VWRUHG LQ D UHWULHYDO V\VWHP RU WUDQVPLWWHG LQ DQ\ IRUP RU E\ DQ\ PHDQV HOHFWURQLF PHFKDQLFDO SKRWRFRS\LQJ UHFRUGLQJ VFDQQLQJ RU RWKHUZLVH ZLWKRXW WKH SHUPLVVLRQ LQ ZULWLQJ RI WKH DXWKRU

JXLWDU\RXUGD\FRP

JXLWDU\RXUGD\#JPDLO FRP

7KLUG HGLWLRQ

&RYHU E\ (PLU #3XOS 6WXGLR

,QWHULRU ERRN GHVLJQ E\ 9ODGLPLU =DYJRURGQ\

7DEOH RI &RQWHQWV

,QWURGXFWLRQ
:KDW LV 0XVLF 7KHRU\ :K\ LV ,W ,PSRUWDQW DQG +RZ ,W &DQ +HOS <RX
0XVLF 5HDGLQJ †† LV ,W 1HFHVVDU\ WR /HDUQ
0XVLF DV D /DQJXDJH

3DUW 0XVLF 7KHRU\ )XQGDPHQWDOV
:KDW LV D 6RXQG 3LWFK 1RWH 7LPEUH DQG 7RQH"
1RWHV LQ 0XVLF
7KH 1RWH &LUFOH
2FWDYH DQG 5HJLVWHU\ 5DQJHV
0LGGOH & DQG 6WDQGDUG 3LWFK
2FWDYH 6XEGLYLVLRQ
0DVWHU 7KH ,QWHUYDOV
:KDW ,V DQ ,QWHUYDO LQ 0XVLF"
0XVLF ,QWHUYDOV 6SHOOHG 2XW
,QYHUWHG ,QWHUYDOV :LWK ,QWHUYDO ([HUFLVH
&KURPDWLF DQG 'LDWRQLF ,QWHUYDOV
$XJPHQWHG DQG 'LPLQLVKHG ,QWHUYDOV
7KH %XLOGLQJ %ORFNV RI 0XVLF †† +DUPRQ\ 0HORG\ DQG 5K\WKP
:KDW 0DNHV D *UHDW 0HORG\"
7KH &RQFHSW RI 5RRW 1RWH

3DUW 0DWHULQJ 6FDOHV DQG 0RGHV
:KDW ,V D 6FDOH LQ 0XVLF"
7KH 0DWHU 6FDOH
7\SHV RI 6FDOHV
0LQRU 3HQWDWRQLF 6FDOH
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:KDW ,V D 0RGH"
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0RGHV RI WKH 0LQRU 3HQWDWRQLF 6FDOH :LWK $XGLR ([DPSOHV
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0LQRU 3HQWDWRQLF 0RGH 0 †DMRU 3HQWDWRQLF 6FDOH
0LQRU 3HQWDWRQLF 0RGH
0LQRU 3HQWDWRQLF 0RGH
0LQRU 3HQWDWRQLF 0RGH
0LQRU 3HQWDWRQLF 0RGH &RPSDULVRQ &KDUWV
7HUP Δ'LDWRQLF ÷ :KDW 'RHV ,W 0HDQ"

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/\GLDQ0RGH
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+DUPRQLF0LQRU0RGH3 †KU\JLDQ
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+DUPRQLF0LQRU0RGH0 †L[RO\GLDQRU6XSHU/RFULDQ
+DUPRQLF0LQRU0RGHV&RPSDULVRQ&KDUWV
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7KH0RGHVRIWKH0HORGLF0LQRU6FDOH
:LWK$XGLR([DPSOHV
0HORGLF0LQRU0RGH †'RULDQ
0HORGLF0LQRU0RGH3 †KU\JLDQ
0HORGLF0LQRU0RGH †/\GLDQ
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0HORGLF0LQRU6FDOH&RPSDULVRQ&KDUWV
6FDOH2YHUYLHZ6 ††FDOH&RPSDULVRQ&KDUW
.H\VDQG.H\6LJQDWXUHV

+RZ WR 8QGHUVWDQG &LUFOH RI)LIWKV DQG &LUFOH RI)RXUWKV

3DUW 0DVWHU WKH &KRUGV

:KDW LV D &KRUG"

+RZ &KRUGV $UH %XLOW

&KRUG 7\SHV '\DGV 7ULDGV 4XDGDGV DQG &KRUG 4XDOLWLHV

8QGHUVWDQGLQJ &KRUG 4XDOLWLHV

7ULDG &KRUGV

6XVSHQGHG &KRUGV

WK &KRUGV 4XDGDGV

)XQGDPHQWDO &KRUG 4XDOLWLHV

7KH &RPSOHWH ([WHQGHG FKRUGV WKV WKV DQG WKV

5XOHV IRU /HDYLQJ 2XW WKH 1RWHV LQ ([WHQGHG &KRUGV

3UREOHP ZLWK WKV

$GGHG 7RQH &KRUGV † :KDW WKV WKH 'LIIHUHQFH

'HP\VWLILQJ WKH $OWHUHG &KRUGV

0DMRU &KRUG $OWHUDWLRQV

0LQRU &KRUG $OWHUDWLRQV

'RPLQDQW &KRUG $OWHUDWLRQV

$OWHUDWLRQ 3RVVLELOLWLHV DQG WKH 8VH RI E DQG

%RUURZHG &KRUGV YV $OWHUHG &KRUGV † &ODVVLFDO YV -D]] 9LHZ

$OWHUHG +DUPRQ\ † +RZ $OWHUHG &KRUGV DUH 8VHG DQG :KHUH 'R 7KH\ &RPH)URP

&KRUGV %XLOW IQ WKV

+RZ &KRUGV &RPH IURP 6FDOHV

+RZ WR $QDO\]H 'LDWRQLF &KRUGV

$VVHPEOLQJ 'LDWRQLF &KRUGV

7UDQVSRVLQJ IURP 2QH .H\ WR $QRWKHU

&KRUG ,QYHUVLRQV DQG &KRUG 9RLFLQJV

0DMRU 7ULDG ,QYHUVLRQV

0LQRU 7ULDG ,QYHUVLRQV

,QYHUVLRQV RI 'LPLQLVKHG DQG $XJPHQWHG &KRUGV

,QYHUVLRQV RI WKV DQG ([WHQGHG &KRUGV

+RZ WR)LQG 5RRW 1RWH 3RVLWLRQ LQ DQ ,QYHUWHG &KRUG

6ODVK &KRUGV

9RLFH /HDGLQJ

3RO\FKRUGV

&KRUG 3URJUHVVLRQV 3DUW

&RPPRQ &KRUG 3URJUHVVLRQV

([WHQGLQJ DQG 6XEVWLWXWLQJ &KRUG 3URJUHVVLRQV

0RYLQJ 7RQDO &HQWHUV 7RQDO &HQWHUV 9V .H\V

:KDW ,V 0RGXODWLRQ DQG +RZ ,V ,W 8VHG

&KRUG $USHJJLRV

3DUW $OO $ERXW WKH 5K\WKP

7KH ,PSRUWDQFH RI +DYLQJ D *RRG 5K\WKP

8QGHUVWDQGLQJ7LPH %HDW %DUDQG7HPSR
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7LPH
7LPH
+RZWR&RXQWLQ
6LPSOH &RPSRXQG DQG&RPSOH[7LPH6LJQDWXUHV
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3RO\UK\WKPV DQG3RO\PHWHUV
$FFHQWV 6\QFRSDWLRQ '\QDPLFV 7HPSR &KDQJHV
%XLOGLQJ%ORFNV RI5K\WKP ++ &UHDWH DQ\5K\WKP3DWWHUQ (DVLO\ :LWK$XGLR([DPSOHV
%DU5DQGRP6HTXHQFH([HUFLVH
$GGLQJ6QFRSDWLRQ
%DU5DQGRP6HTXHQFH([HUFLVH

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'UDPD
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,PSURYLVDWLRQ DV,QVWDQWDQHRXV&RPSRVLWLRQ
1RWH5HODWLYLVP
+RZ &KRUGV)XQFWLRQ LQ D .H\
+RZ1RWHV)XQFWLRQ LQ D&KRUG
7\SHV RI +DUPRQ\
7RQDO +DUPRQ\
0RGDO YV 7RQDO +DUPRQ\
3RO\WRQDOLW\
$WRQDO +DUPRQ\
4XHVWLRQV WR3RQGHU

3DUW *RLQJ%HRQG WKH)RXQGDWLRQV
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&KDQJLQJ WKH5RRW
&KRUG3URJUHVVLRQ6XEVWLWXWLRQV
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&KRUG6XEVWUDFWLRQ
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0RGDO5HGXFWLRQ

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3RO\QRPLDO6XEVWLWXWLRQV
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,PSURYLVLQJ2YHU&KRUG3URJUHVVLRQV
&KRUG7RQHV
([WHQVLRQV
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&KURPDWLFLVP
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&KURPDWLF6OLGLQJ
3RO\PRGDOLW\
$WRQDOLW\
&KURPDWLF3ODLQJ
2UQHWWH&ROHPDQ+DUPRORGLFV
)UHH+DUPRQ\
%H\RQG+DUPRQ\0HORG\DQG5K\WKP
6SLULWXDOLW\DQG0XVLF7KHRU\

$1RWHIURPWKH$XWKRU

2WKHU%RRNVE\1LFRODV

&KHDW6KHHW

,QWURGXFWLRQ

:KDW LV 0XVLF 7KHRU\ :K\ LV ,W ,PSRUWDQW DQG +RZ ,W &DQ +HOS <RX

0RVW RI XV KDYH KHDUG RI PXVLF WKHRU\ 6RPH RI XV DUH LPPHGLDWHO\ H[FLWHG E\ WKH VHQVH WKDW LW LV IRUHLJQ WR XV DQG E\ WKH LGHD WKDW WKHUH LV VRPHZKHUH D ERG\
RI NQRZOHGJH WKDW ZLOO PDNH XV EHWWHU SODYHUV WKDW ZLOO PDNH XV SOD\ OLNH RXU
KHURHV :H PD\ HYHQ EH H[FLWHG E\ WKH LGHD RI VSHQGLQJ ORQJ KRXUV VWXG\LQJ PXVLF OHDUQLQJ QDPHV DQG FRQFHSWV ZRUNLQJ WR DSSO\ WKRVH WKLQJV WR RXU PXVLF %HFRPLQJ PDVWHUV QRW MXVW RI RXU LQVWUXPHQWV EXW RI WKH ILHOGV RI VRXQG WKDW WKH\
SURGXFH

%XW ZH PD\ DOVR QRW EH VR H[FLWHG 0XVLF WKHRU\ PD\ VHHP PLOHV DZD\ ††† GLIILFXOW EXUGHQVRPH WLPH FRQVXPLQJ :H PD\ IHHO DV WKRXJK ZH GRQ¶W ZDQW WR VSHQG \HDUV RI RXU OLIH OHDUQLQJ WKLQJV WKDW PD\ RU PD\ QRW WXUQ XV LQWR WKH VRUWV RI PXVLFLDQV ZH ZDQW WR EH :H PD\ KDYH WKH VHQVH WKDW PXVLF WKHRU\ LV IRU WKH VFKRODUV IRU WKH VWXGHQWV DW 8QLYHUVLWLHV IRU WKH MD]]KHDGV DQG QRW IRU XV 1RW
IRU SODLQ PXVLFLDQV ZKR MXVW ZDQW WR EOHHG RXUVHOYHV D OLWWOH IURP RXU
LQVWUXPHQWV ,W PD\ HYHQ VHHP DV WKRXJK XQGHUVWDQGLQJ WKHRU\ ZLOO EH
FRXQWHUSURGXFWLYH VLQFH LW VHHPV OLNH LW ZLOO WXUQ VRPHWKLQJ H[SHUVLYH
VRPHWKLQJ YLVFHUDO LQWR VRPHWKLQJ SODLQO\ XQGHUVWDQGDEOH 6RPHWKLQJ ZH FDQ DQDO\]H DQG H[SODLQ

:KDWHYHU\RXU DWWLWXGH WRZDUG WKHRU\ LV WKLV ERRN LV PHDQW WR VD\ WKDW\RX ZLOO JUHDWO\ EHQHILW IURP OHDUQLQJ WKH IXQGDPHQWDO FRQFHSWV RI KDUPRQ\ PHORG\ DQG UK\WKP)DU IURP OHHFKLQJ \RXU DIIHFWLYH FUHDWLYLW\ OHDUQLQJ WR WKLQN DERXW PXVLF JLYHV \RX D SODFH WR GHSDUW IURP D VSDFH LQ ZKLFK WR ZRUN ,W DPSOLILHV \RXU H[SHUVLYH SRWHQWLDO LQ MXVW WKH VDPH ZD\ WKDW NQRZLQJ VRPHWKLQJ DERXW

KRZ WR PDNH IRRG DPSOLILHV D JRRG PHDO †† ZKHQ \RX NQRZ ZKDW WR ORRN IRU DQG \RX DUH IDPLOLDU LQ JHQHUDO ZLWK WKH DHVWKHWLF VSDFH WKDW \RX ¹UH ZRUNLQJ LQ WKDW VSDFH LV ULFKHU DQG GHHSHU 3HULRG

$QG WKDW LV ZKDW WKHRU\ LV $ERYH DOO LW LV D ERG\ RI LGHDV WKDW KHOSV IDPLOLDUL]H \RX ZLWK WKH DHVWKHWLF VSDFH RI PXVLF ,W GRHVQ¶W WHOO \RX ZKDW \RX PXVW GR LW
RQO\ KRQHV \RXU HDU DQG \RXU KDQGV VR WKDW \RX FDQ EHWWHU GLVFRYHU ZKDW \RX ZDQW WR GR 7KHRU\ LV KDUPRQ\ PHORG\ DQG UK\WKP ++ WKH IXQGDPHQWDO
VWUXFWXUHV RI VRXQG WKDW PDNHV LW SRVVLEOH IRU WKDW VRXQG WR EH RUJDQL]HG
PXVLFDOO\ $QG LW ZLOO PDNH \RX D EHWWHU SOD\HU

7KH DLP RI WKLV ERRN LV WR KHOS \RX OHDUQ PXVLF WKHRU\ LQ D VWUXFWXUHG ZD\ WKDW LV HDV\ WR IROORZ DQG XQGHUVWDQG 0XVLF WKHRU\ LV XQLYHUVDO DQG DSSOLHV WR DOO LQVWUXPHQWV 6LQFH SLDQR LV PXVLF WKHRU\ KHDYLO\ RULHQWHG LQVWUXPHQW RQH FDQ
SOD\ DV PXFK DV QRWHV VLPXOWDQHRXVO\ DOO NH\ FRQFHSWV DUH XVXDOO\ EHVW H[SODLQHG RQ D SLDQR NH\ERDUG ++ ZKLFK, ZLOO GR ZKHQHYHU WKHUH LV VRPHWKLQJ LPSRUWDQW WR GHPRQVWUDWH YLVXDOO\ 6R GRQ¶W ZRUU\ LI \RX¶UH QRW D SLDQR SOD\HU \RX¶OO VHH MXVW KRZ DSSOLFDEOH PXVLF WKHRU\ LV RQ DQ\LQVWUXPHQW DQG ZK\ LW LV DQ HVVHQWLDO PHDQV RI FRPPXQLFDWLRQ EHWZHHQ DOO NLQGV RI PXVLFLDQV

0XVLF 5HDGLQJ ++ LV ,W 1HFHVVDU\ WR /HDUQ

0DQ\ SHRSOH DVVRFLDWH PXVLF WKHRU\ ZLWK UHDGLQJ PXVLF $QG WKLV LV EHFDXVH ZKHQ SHRSOH WHDFK WKHRU\ PRVW QRWDEO\ LQ PXVLF VFKRROV WKH\ RIWHQ WHDFK LW RQ WKH VWDII WKH V\VWHP RI PXVLFDO V\PEROV DQG XVXDOO\ WKH\ GR WKDW ZLWK UHVSHFW WR WKH SLDQR 5HDGLQJ PXVLF FDQ KHOS SHRSOH WR XQGHUVWDQG WKH IXQGDPHQWDOV RI KDUPRQ\ PHORG\ DQG UK\WKP VR VRPH SHRSOH WKLQN EHFDXVH LW JLYHV XV D ZD\ RI ZULWLQJ LW GRZQ YLVXDOL]LQJ LW DQG FRPPXQLFDWLQJ LW FOHDUO\

,I \RX DUH LQWHUHVWHG LQ OHDUQLQJ WR UHDG PXVLF WKHQ WKHUH DUH PDQ\ WRROV
DYDLODEOH IRU \RX WR GR VR EXW LW LV ZRUWK VD\LQJ KHUH WKDW LW LVQ¶W D QHFHVVDU\ SDUW

RI OHDUQLQJ WKHRU\ 7KHRU\ LV D FROOHFWLRQ RI LGHDV LGHDV WKDW LQWHUDFW ZLWK RQH
DQRWKHU DQG JXLGH RXU HDUV 3XWWLQJ WKDW WKHRU\ GRZQ V\PEROLFDOO\ RQ WKH VWDII

FDQ EH XVHIXO EXW LW GRHVQ ¶W DOO E\ LWVHOI PHDQ WKDW ZH ZLOO XQGHUVWDQG LW RU EH
DEOH WR XVH LW DQ\EHWWHU

,Q VKRUW ZKHQ OHDUQLQJ PXVLF WKHRU\ LW LV QRW QHFHVVDU\ WR OHDUQ WR UHDG PXVLF
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FRPSRVHU WKHQ LW LV HVVHQWLDO WR EH DEOH WR FRPPXQLFDWH \RXU YLVLRQ WR
RWKHU
PXVLFLDQV :KLOH WKDW GRHVQ ¶W QHFHVVDULO\ PHDQ ZULWLQJ PXVLF WUDGLWLRQDOO\ LW
LV
XVHIXO WR NQRZ KRZ WR /LNHZLVH LI \RX DUH D VHVVLRQ SOD\HU RU D PHPEHU RI
VRPHRQH HOVH ¶V EDQG LW LV KLJKO\ OLNHO\ WKDW SHRSOH ZLOO EH KDQGLQJ \RX VKHHW
PXVLF WR OHDUQ RU HYHQ WR VLJKWUHDG VLJKWUHDGLQJ LV WKH DFW RI SOD\LQJ D SLHFH
ZKLOH \RX UHDG LW XVXDOO\ RQH \RX KDYH QHYHU UHDG EHIRUH

,Q WKRVH FDVHV LW LV XVHIXO WR EH DEOH WR UHDG PXVLF %XW LQ JHQHUDO LI \RX DUHQ ¶W
JRLQJ WR EH PDNLQJ \RXU OLYLQJ SOD\LQJ LQ RWKHU SHRSOH ¶V EDQGV DQG RQ RWKHU
SHRSOH ¶V DOEXPV DQG LI \RX DUH KDSS\ WR OHDUQ ZD\V RI FRPPXQLFDWLQJ \RXU
PXVLF WR RWKHU SOD\HUV WKDW LV QRQ VWDQGDUG RU QRQ WUDGLWLRQDO WKHQ \RX PD\ EH
MXVW DV KDSS\ QRW OHDUQLQJ PXVLFDO QRWDWLRQ 7KHUH DUH PDQ\ JUHDW PXVLFLDQV ZKR
GRQ ¶W NQRZ KRZ WR UHDG PXVLF KRZHYHU WKH\ GR XQGHUVWDQG PXVLF WKHRU\ DQG
KRZ PXVLF ZRUNV

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UHPHPEHU WKDW \RX FDQ OHDUQ DQG XVH PXVLF WKHRU\ ZLWKRXW KDYLQJ DWWDLQHG WKLV
VNLOO EXW \RX FDQQRW OHDUQ DQG XQGHUVWDQG KRZ WR UHDG PXVLF ZLWKRXW
XQGHUVWDQGLQJ WKH EDVLF PXVLF WKHRU\ILUVW

7KH FKRLFH RI ZKHWKHU RU QRW WR OHDUQ KRZ WR UHDG PXVLF DQG ZULWH LW GRZQ RQ WKH
VWDII XVLQJ WUDGLWLRQDO PXVLFDO QRWDWLRQ LV HQWLUHO\ XS WR \RX ++ LW
GHSHQGV RQ
\RXU JRDOV DV D PXVLFLDQ 7KLV LV FHUWDLQO\ D XVHIXO VNLOO WKDW ZLOO GHHSHQ \RXU
XQGHUVWDQGLQJ RI KRZ ZH WKLQN DERXW PXVLF DQG ,ZRXOG GHILQLWHO\ UHFRPPHQG
\RX WR OHDUQ DW OHDVW WKH EDVLFV RI KRZ ZH FDSWXUH LW RQ WKH VWDII 7KLV ERRN
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PXVLF
XVLQJ WUDGLWLRQDO QRWDWLRQ EHFDXVH WKDW LV D VHSDUDWH VXEMHFW ++PRUH
VXLWDEOH IRU D
VHSDUDWH ERRN ,W LV QRW HVVHQWLDO LQ RUGHU WR EHQHILW IURP OHDUQLQJ PXVLF WKHRU\
SOXV LW PDNHV LW OHVV FRPSOLFDWHG DQG HDVLHU WR OHDUQ HVSHFLDOO\ IRU EHJLQQHUV
RU
QRQSURIHVVLRQDO PXVLFLDQV

,I \RX GHFLGH WKDW \RX ZDQW WR OHDUQ KRZ WR UHDG PXVLF ZULWH LW GRZQ DQG
LQWHUSUHW ZULWWHQ QRWDWLRQ DQG KRZ LW "V DOO FRQQHFWHG WR WKH PXVLF WKHRU\
WKHQ,
KDYH D JUHDW WRRO IRU \RX WR FRQVLGHU

$ VLEOLQJ ERRN QG ERRN LQ WKH 0XVLF 7KHRU\ 0DVWHU\ VHULHV GHGLFDWHG VROHO\ WR OHDUQLQJ KRZ WR UHDG PXVLF IRU EHJLQQHUV DQG DWWDLQLQJ WKH EDVLF OHYHO RI
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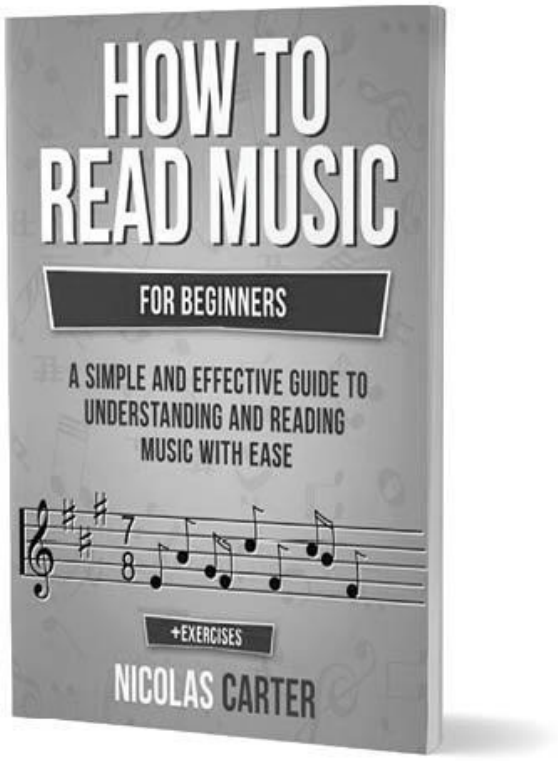

ZZZ DPD]RQ FRP GS % - +15

:LWK WKLV ERRN \RX ¶OO HDVLO\ OHDUQ WKH IXQGDPHQWDOV RI WKH QRWDWLRQ V\VWHP DQG NH\ VLJQDWXUHV FOHIV VWDII HOHPHQWV QRWHV KRZ UK\WKPV DUH ZULWWHQ VROIHJH DQG PXFK PRUH 7KHUH DUH DOVR SURJUHVVLYH H[HUFLVHV DW WKH HQG LQ ZKLFK \RX ¶OO EH UHTXLUHG WR DSSO\ HYHU\WKLQJ \RX ¶YH OHDUQHG LQ WKH ERRN DQG DFWXDOO\ VLJKWUHDG D
PXVLFDO SLHFH ,W ZLOO DOVR EH YHU\ H[FLWLQJ WR VHH KRZ LW DOO UHODWHV WR ZKDW \RX OHDUQ KHUH DQG KRZ PDQ\ FRQFHSWV FRPSOHPHQW HDFK RWKHU

0XVLF DV D /DQJXDJH

,W LV VRPHWLPHV XVHIXO WR WKLQN RI PXVLF DV D FDOFXOXV DV D ULJLG V\VWHP RI QXPHULFDO UHODWLRQVKLSV ,W VHHPV ZKHQ \RX WKLQN DERXW WKH IDFW WKDW HYHU\WKLQJ

UHGXFHV WR LQWHUYDOV DQG WKHLU UHODWLRQV WKDW IXQGDPHQWDOO\ PXVLF WKHRU\ LV
PDWKHPDWLFDO ,W LV VRPHWLPHV XVHIXO EXW LW LVQ 'W HQWLUHO\ DFFXUDWH WR WKLQN DERXW
PXVLF WKDW ZD\

0XVLF LVQ 'W D FDOFXOXV PXVLF LVQ 'W DQ DEVWUDFW V\VWHP RI QXPEHUV PXVLF LV DQ H[SUHVVLRQ ,W LV FUHDWLYH LQ WKH VDPH ZD\ WKDW SDLQWLQJ D SRUWUDLW LV FUHDWLYH DQG
WKH GLIIHUHQFH EHWZHHQ FUHDWLYH PXVLFDO PHDQLQJ DQG UHSUHVHQWLQJ PXVLF
PDWKHPDWLFDO\ LV WKH GLIIHUHQFH EHWZHHQ SDLQWLQJ GHHSO\ DQG FUHDWLYHO\ DQG SDLQWLQJ E\ QXPEHUV

$OO RI WKLV LV WR VD\ WKDW PXVLF LVQ 'W PDWK PXVLF LV D ODQJXDJH $QG MXVW OLNH RXU RUGLQDU\ ODQJXDJH LW LV PHVV\ VXEWOH FRPSOLFDWHG H[SUHVVLYH QXDQFHG DQG VRPHWLPHV GLIILFXOW 7KHUH DUH WKLQJV \RX FDQ OHDUQ UXOHV LI \RX OLNH WKDW PDNH XS WKH JUDPPDU RI PXVLF 7KLV LV WKH V\VWHP RI QRWHV LQWHUYDOV VFDOHV FKRUGV ZKLFK ZH ZLOO OHDUQ LQ WKLV ERRN HWF %XW WR PDNH XVH RI WKHRU\ LW LV DOZD\V LPSRUWDQW WR UHPHPEHU WKH ZD\ODQJXDJH ZRUNV ++ \RX FDQ 'W OHDUQ D ODQJXDJH E\ OHDUQLQJ D VHW RI UXOHV \RX KDYH WR OHDUQ LW E\ LPPHUVLQJ \RUVHOI LQ LW DQG JHWWLQJ D VHQVH RI LWV SUDFWLFHV

7R XQGHUVWDQG PXVLF DV D ODQJXDJH PHDQV WR DOZD\V PDNH WKHRU\ FRPH DOLYH QHYHU WR OHW LW VLW DQG EHFRPH VWDOH 7R OLYH LW DQG SUDFWLFH LW E\ OLVWHQLQJ SOD\LQJ
VLQJLQJ H[SHULPHQWLQJ ZULWLQJ DQG WKLQNLQJ LW ,QWHUYDOV DUH RQO\ DVJRRG DV WKH UHDO QRWHV WKDW FRPSRVH WKHP DQG PXVLF LV RQO\ DVJRRG DV WKH OLQJXLVWLF H[SUHVVLRQV WKDW LW FRPSULVHV

- ,Q 3DUW RI WKLV ERRN ZH ZLOO VHWXS WKH IXQGDPHQWDO IUDPHZRUN WKDW FRQVWLWXWHV PXVLF ODQJXDJH QDPHO\ QRWHV DQG LQWHUYDOV
- ,Q 3DUWV DQG ZH 'OO VHH KRZ QRWHV DQG LQWHUYDOV DUH XVHG WR FUHDWH PRUH FRPSOLFDWHG VWUXFWXUHV VXFK DV VFDOHV DQG FKRUGV
- -XVW OLNH D ODQJXDJH PXVLF GRHVQ 'W KDSSHQ ZLWKRXW WLPH ZKLFK LV ZK\ 3DUW LV DOO DERXW WLPH DQG UK\WKP DQG KRZ WR XQGHUVWDQG WKLV FUXFLDO FRPSRQHQW RI PXVLF
- ,Q 3DUWV DQG \RX ZLOO OHDUQ DERXW WKH W\SHV RI KDUPRQ\ KRZ WR DSSURDFK FRPSRVLQJ DQG PDQLSXODWLQJ PXVLFDO VWUXFWXUHV DQG KRZ WR EH PRUH H[SUHVVLYH PXVLFDOO\ ++ ZKLFK JRHV EH\RQG PHUHO\ SOD\LQJ WKH QRWHV RU FKRUGV
-)LQDOO\ LQ 3DUW ZH ZLOO GLYH GHHS LQWR KDUPRQ\ DQG H[DPLQH VRPH DGYDQFHG PXVLFDO FRQFHSWV WKDW ZLOO JLYH \RX D JUDQGHU SHUVSHFWLYH DERXW WKH ZLGH VFRSH RI PXVLF DQG WKH SRVVLELOLWLHV \RX PD\ QRW KDYH HYHQ FRQVLGHUHG RU NQHZ WKH\ H[LVW

*HW UHDG\ DQG OHW 'V JHW VWDUWHG

3DUW

0XVLF 7KHRU\ )XQGDPHQWDOV

:KDW LV D 6RXQG 3LWFK 1RWH 7LPEUH DQG 7RQH"

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RQ WKH WLQLHVW ODYHUV LV MXVW WKDW ††D YLEUDWLRQ LQ WKH TXDQWXP ILHOG :KHQ
VRPHWKLQJ YLEUDWHV LW SURGXFHV ZDYHV :DYHV LQ SK\VLFV DUH GLVWXUEDQFHV WKDW WUDQVIHU HQHUJ\ DQG WKHUH DUH WZR PDLQ W\SHV ZH H[SHULHQFH LQ RXU SHUFHLYDEOH
VXUURXQGLQJV PHFKDQLFDO DQG HOHFWURPDJQHWLF 7KH PDLQ GLIIHUHQFH LV WKDW
PHFKDQLFDO ZDYHV UHTXLUH WKH SUHVHQFH RI SK\VLFDO PDWWHU OLNH DLU WKURXJK ZKLFK WKH\ FDQ WUDYHO (OHFWURPDJQHWLF ZDYHV GR QRW UHTXLUH SK\VLFDO PHGLXP †† WKH\ FDQ WUDYHO WKURXJK WKH YDFXXP RI VSDFH

6R ZKDW LV D VRXQG WKHQ" ,Q WKH VLPSOHVW WHUPV VRXQG FDQ EH GHILQHG DV PHFKDQLFDO SUHVVXUH ZDYHV WKDW WUDYHO WKURXJK D SK\VLFDO PHGLXP OLNH DLU RU ZDWHU 6RXQG KDV LWV RZQ XQLTXH SURSHUWLHV VXFK DV IUHTXHQF\ VSHHG
DPSOLWXGH GXUDWLRQ HWF 7KH SURSHUW\ ZKLFK FRQFHUQV XV PRVW LV WKH IUHTXHQF\ ZKLFK ZH FDQ GHILQH DV WKH QXPEHU RI SUHVVXUH ZDYHV WKDW UHSHDW RYHU D SHULRG RI WLPH 6RXQG IUHTXHQF\ LV PHDVXUHG LQ KHUW] +] ZKHUH KHUW] PHDQV WKDW D SUHVVXUH ZDYH UHSHDWV RQFH SHU VHFRQG +LJKHU IUHTXHQF\ VLPSO\ PHDQV PRUH ZDYHV SHU VHFRQG DQG YLFH YHUVD

7KLV EULQJV XV WR WKH SLWFK 3K\VLFDOO\ LW FDQ EH VDLG WKDW SLWFK LV D VSHFLILF IUHTXHQF\ RI VRXQG SURGXFHG E\ D YLEUDWLQJ REMHFW VXFK DV D JXLWDU VWULQJ 8V KXPDQV KDYH WKH DELOLW\ WR KHDU D ZLGH UDQJH RI VRXQG IUHTXHQFLHV UDQJLQJ IURP +] WR +] RU N+] RQ DYHUDJH DOWKRXJK WKLV UDQJH UHGXFHV DV ZH

DJH DQG LW LV QRW KLQJ FRPSDUHG WR VRPH DQLPDOV 0XVLFDOO\ D SLWFK LV OLNH WKH

KDUPRQLF YDOXH RI D QRWH DQG LW LV VDLG WR EH KLJKHU RU ORZHU WKDQ RWKHU SLWFKHV ,Q D VHQVH VWXG\LQJ KDUPRQ\ DQG PHORG\ LV VWXG\LQJ SLWFK DQG WKH UHODWLRQVKLSV EHWZHHQ SLWFKHV

$ QRWH E\ WKH ZD\ LV VLPSO\ D QDPHG VSHFLILF SLWFK ZLWK D SDUWLFXODU GXUDWLRQ ORXGQHVV DQG TXDOLW\ 7KH QRWHV DUH QDPHG ZLWK DQ DOSKDEHW OHWWHU UDQJLQJ IURP $ WR * ZH ¶OO JHW WR WKHP LQ D ELW (DFK RI WKH QRWHV KDV LWV RZQ SLWFK WKDW PDNHV LW WKH QRWH WKDW LW LV IRU H[DPSOH $ QRWH IRXQG R QWKH JXLWDU VWULQJ LV +] ZKHQ WXQHG WR WKH VWDQGDUG SLWFK

7ZR VRXQGV FDQ KDYH GLIIHUHQW UK\WKPLF YDOXHV DQG FDQ VRXQG GLIIHUHQW RYHUDOO EXW LI WKH\ KDYH WKH VDPH SLWFK WKH\ ZLOO VWLOO EH WKH VDPH QRWH ,I WZR VRXQGV WKDW DUH WKH VDPH QRWH VRXQG GLIIHUHQW WKHQ LW LV VDLG WKDW WKHVH WZR VRXQGV KDYH GLIIHUHQW WLPEUHV $ WLPEUH LV OLNH D VRXQG FRORU RU VRXQG TXDOLW\ WKDW FRPHV IURP GLIIHUHQW LQVWUXPHQWV)RU LQVWDQFH D &QRWH SOD\HG RQ D SLDQR LV WKH VDPH QRWH DV & SOD\HG RQ D YLROLQ EXW ZH SHUFHLYH WKHLU VRXQG TXDOLW\ GLIIHUHQWO\ EHFDXVH RI WKH WLPEUH

)LQDOO\ WKH WHUP ¤P WRQH ¶ LV RIWHQ XVHG LQWHUFKDQJHDEO\ ZLWK D ORW RI WKHVH WHUPV LQ
PXVLF ZKLFK XVXDOO\ FDXVHV VRPH FRQIXVLRQ 7RQH LV RIWHQ V\QRQ\PRXV ZLWK WLPEUH ZKHQ ZH VD\ WKDW GLIIHUHQW LQVWUXPHQWV KDYH GLIIHUHQW WRQHV RU WKDW WKH\ KDYH JRRG WRQHV ZH DUH DFWXDOO\ WDONLQJ DERXW WKHLU WLPEUHV)XUWKHUPRUH WRQH LV V\QRQ\PRXV ZLWK D QRWH XVXDOO\ ZKHQ ZH WDON DERXW SOD\LQJ GLIIHUHQW WRQHV DQG LW LV XVHG DV D QDPH IRU D SDUWLFXODU PXVLF LQWHUYDO 0XVLFDO WRQH LV DOVR
FRQVLGHUHG DV D VWHDG\ VRXQG ZLWK SURSHUWLHV OLNH D UHJXODU QRWH RQO\ WKDW LW LV D
VLQJOH SXUH IUHTXHQF\ WKDW FDQ RQO\ EH SURGXFHG GLJLWDOO\ ,I\RX ZDQW WR KHDU D SXUH VLQJOH IUHTXHQF\ WKH EHVW ZD\ WR GR WKDW LV LQ D VRXQGSURRI URRP WKDW HOLPLQDWHV DQ\ H[FHVV UHVRQDQFH RU YLEUDWLRQ 2Q WKH RWKHU KDQG PXVLFDO QRWH
SURGXFHG E\ D PXVLFDO LQVWUXPHQW LV ZD\ PRUH FRPSOH[WKDQ D VLQJOH IUHTXHQF\ GXH WR WKH LQVWUXPHQW ¶V QDWXUDO UHVRQDQFH DQG KDUPRQLFV DV ZHOO DV WKH DFRXVWLFV RI WKH HQYLURQPHQW DQG WKH ZD\ WKDW WKH QRWH LV SODI\HG ZKDW ZH KHDU DV D VLQJOH QRWH LV DFWXDOO\ D ZKROH VSHFWUXP RI IUHTXHQFLHV FRPLQJ IURP WKH LQVWUXPHQW WKDW RXU HDUV SHUFHLYH PRUH RU OHVV DV D VLQJOH IUHTXHQF\

1RWHV LQ 0XVLF

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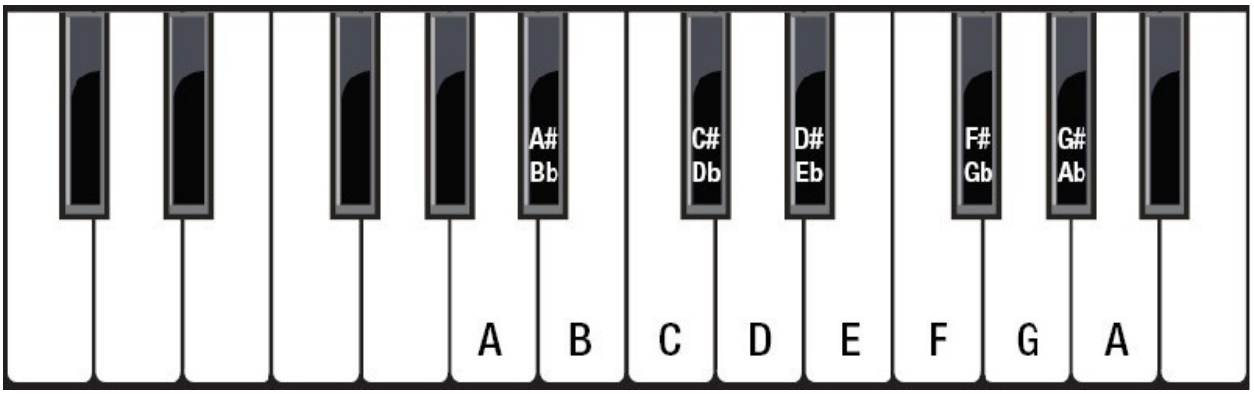
7KHUH DUH RQO\ QRWHV LQ :HVWHUQ PXVLF ZKLFK LV KLVWRULFDOO\ GHULYHG IURP WKH (XURSHDQ PXVLF DQG LV E\ IDU WKH PRVW FRPPRQ PXVLF V\VWHP WKDW ZH KHDU WRGD\ 7KHUH DUH RWKHU PXVLF ΔV\VWHPV ÷ RXW WKHUH OLNH ,QGLDQ $IULFDQ &KLQHVH DQG RWKHU WUDGLWLRQDO IRON PXVLF ZKLFK DUH DOO GLIIHUHQW DQG PDNH XVH RI GLIIHUHQW
VFDOHV

7KH QRWHV LQ :HVWHUQ PXVLF DUH DVIROORZV

$ $ RU %E % & & RU 'E ' ' RU (E ( )) RU *E * * RU $E

+HUH DUH WKRVH QRWHV OLGLQJ RXW RQ D SLDQR NH\ERDUG



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7KHUH DUH D FRXSOH RI WKLQJV WR QRWH KHUH

7KH QRWHV DUH QDPHG DIWHU WKH ILUVW OHWWHUV RI WKH DOSKDEHW $ % & ' ( ) *

7KHUH DUH DOVR QRWHV O\LQJ EHWZHHQ WKRVH $ %E & 'E ' (E) *E * $E WKDW DUH QDPHG ZLWK VKDUSV ϧ VPERO ZKLFK LQGLFDWHV WKDW D QRWH LV UDLVHG DQG IODWV
ϨE ϧ VPERO ZKLFK LQGLFDWHV WKDW D QRWH LV ORZHUHG
,Q WKLV V\VWHP WKH VKDUS RI RQH QRWH LV KDUPRQLFDOO\ LGHQWLFDO ϯ DOVR FDOOHG
HQKDUPRQLFDOO\HTXLYDOHQW ϯ WR WKH IODW RI WKH QRWH DERYH LW ,Q RWKHU ZRUGV $ LV H[DFWO\ WKH VDPH WRQH DV %E & LV WKH VDPH WRQH DV 'E ' DV (E HWF

7KHUH DUH QR VKDUSV RU IODWV EHWZHHQ % DQG & RU EHWZHHQ (DQG) 7KDW ϧV MXVW RQH IXQGDPHQWDO FKDUDFWHULVWLF RI WKH PXVLF V\VWHP WKDW ZH XVH WRGD\

7KH QRWHV WKDW GRQ ϧW KDYH DQ\ VKDUSV RU IODWV ϯ DOO ZKLWH NH\V RQ SLDQR NH\ERDUG ϯ DUH FDOOHG 1DWXUDO QRWHV 7KH EODFN NH\V RQ SLDQR NH\ERDUG DUH DOZD\V WKH QRWHV ZLWK VKDUSV RU IODWV

7KH GLVWDQFH EHWZHHQ DQ\WZR RI WKHVH QRWHV WKDW DUH QH[W WR HDFK RWKHU LV FDOOHG D KDOIVWHS + DQG HDFK KDOIVWHS LV WKH VDPH GLVWDQFH IRU H[DPSOH WKH GLVWDQFH EHWZHHQ %E DQG % LV WKH VDPH DV WKH GLVWDQFH EHWZHHQ (DQG) 7KH GLVWDQFH FRPSULVLQJ WZR KDOIVWHSV ZKLFK LV WKH GLVWDQFH EHWZHHQ IRU LQWDQFH & DQG ' LV FDOOHG D ZKROH VWHS :

,Q SUHYLRXV VHFWLRQ LW ZDV PHQWLRQHG WKDW WKH WHUP ³PWRQH ´ LV VRPHWLPHV XVHG DV D
QDPH IRU D SDUWLFXODU PXVLF LQWHUYDO 7KLV LV WKDW FDVH ††RIWHQWLPHV WKH WHUP
VHPLWRQH 6 LV XVHG LQVWHDG RI WKH KDOIVWHS DQG WRQH 7 LQVWHDG RI WKH ZKROH
VWHS 7KHVH DUH IXUWKHU GLIIHUHQW QDPHV IRU WKH VDPH WKLQJ +DOIVWHSV RU VHPLWRQHV
DUH HTXDO WR WKH GLVWDQFH IURP RQH SLDQR NH\ WR WKH QH[W RU RQH IUHW RQ JXLWDU
WR
WKH QH[W ZKLFK LV ZK\ WKHUH DUH NH\V RU IUHWV SHU RFWDYH RQ WKRVH
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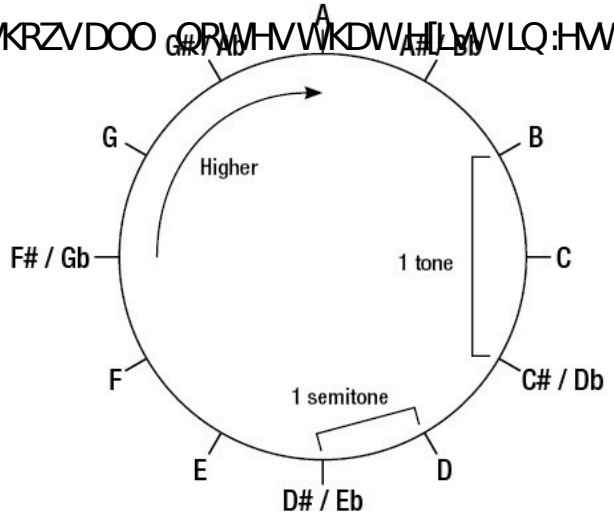

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2QWKHRSSRVLWH ZKHQHYHU\RX ‡UHPRYLQJFRQWHUFORFNZLVH IURPULJKWWROHIW RQ SLDQR WKH QRWHV DUH EHFRPLQJ ORZHU LQ SLWFK DQG KHQFH ZH ZRXOG XVH ▫P E ‡ VPERO †† 'E LQVWHDG RI & WR LQGLFDWH WKDW ZH ‡UH GHVFHQGLQJ

2FWDYH DQG 5HJLVWU\ 5DQJHV

(DFK QRWH KDV LWV RZQ SLWFK EXW DV ZH VDZ WKHUH DUH RQO\ VR PDQ\ GLIIHUHQW QRWHV WKHUH DUH LQ WKH :HVWHUQ PXVLF V\VWHP 7KLV GRHVQ ‡W FRYHU WKH ZKROH UDQJH WKDW RXU HDUV FDQ KHDU 7KDW PHDQV WKDW WKRVH QRWHV KDYH WR UHSHDW LQ KLJKHU
DQG ORZHU UHJLVWHUV $OO UHJLVWHUV FRQWDLQ WKH VDPH QRWHV UHSHDWHG ERWK LQ
KLJKHU DQG ORZHU SLWFKHV

:KHQ D QRWH UHSHDWV LQ D KLJKHU RU ORZHU UHJLVWHU ††ZKHQ LW KDV D GLIIHUHQW SLWFK EXW LV WKH VDPH QRWH ††ZH VD\ WKDW WKH GLVWDQFH EHWZHHQ WKRVH QRWHV LV PHDVXUHG
LQ RFWDYHV $Q RFWDYH LV VLPSO\ WKH GLVWDQFH EHWZHHQ RQH QRWH DQG WKDW VDPH QRWH
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XS IURP DQRWKHU QRWH LV WZLFH WKDW RI WKH ILUVW PHDQLQJ WKDW WKHUH DUH WZLFH DV
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VWD\V WKH VDPH :KDW WKDW PHDQV LV WKDW LI \RX XQGHUVWDQG VRPHWKLQJ LQ RQH RFWDYH \RX KDYH XQGHUVWRRG LW LQ DOO RI WKHP ,I\RX ORRN EDFN DW WKH QRWH FLUFOH)LJXUH \RX FDQ VHH WKDW DQ RFWDYH LV HTXDO WR JRLQJ RQH IXOO ZD\ DURXQG WKH QRWH FLUFOH IURP DQ\VWDUWLQJ QRWH ,I\RX JR FORFNZLVH DQG HQG XS RQ WKH VDPH QRWH \RX ZRXOG JHW DQ RFWDYH KLJKHU QRWH DQG OLNHZLVH LI \RX JR FRXQWHU FORFNZLVH \RX ZRXOG JHW DQ RFWDYH ORZHU QRWH $IWHU RQH RFWDYH WKH QRWHV VLPSO\ UHSHDW WKHPVHOYHV LQ WKH VDPH RUGHU LQ WKH QH[W ORZHU RU KLJKHU
RFWDYH UHJLVWHU 1RWH WKDW WKH WHUPV ▫P RFWDYH ‡ DQG ▫P UHJLVWHU ‡ DUH RIWHQ XVHG

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KHDU WKHUH DUH RQO\ VR PDQ\ UHJLVWHUV RU RFWDYHV DW RXU GLVSRVDO 'LIIHUHQW LQVWUXPHQWV YDU\ D ORW LQ WKHLU UDQJHV VRPH LQVWUXPHQWV VXFK DV SLDQRV KDYH
PDQ\RFWDYHV VR WKDW HYHQ WKRXJK WKHUH DUH RQO\ QRWHV WKHUH DUH NH\V RQ D IXOO VL]H NH\ERDUG GLIIHUHQW SLWFKHV WKDW FDQ EH SURGXFHG ZKLFK LV DV PDQ\ DV RFWDYHV

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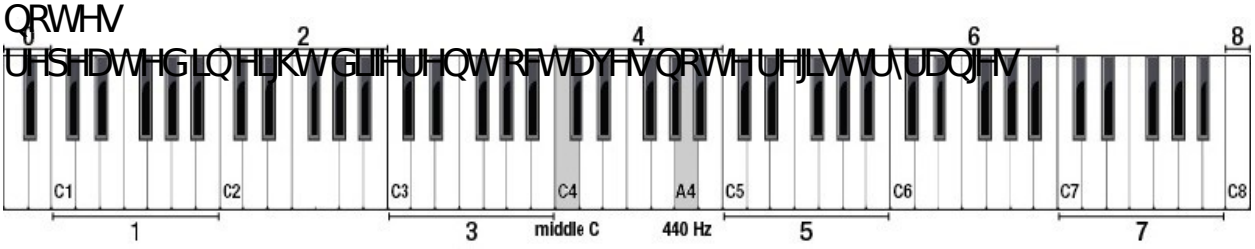

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[WKOG VL]H SLDQR NH\ERDUG

<RX PD\ KDYH VHHQ EHIRUH D QRWH ZLWK D QXPEHU QH[W WR LW DQG ZRQGHUHG ZKDW WKDW QXPEHU PHDQV 8QOHVV ZH ¶UH WDONLQJ DERXW D SDUWLFXODU FKRUG WKDW QXPEHU
WHOOV XV ZKDW NLQG RI UHJLVWU\ UDQJH WKH QRWH LV LQ /RRNLQJ DW WKH ILJXUH \RX FDQ VHH WKDW WKHUH DUH HLJKW & QRWHV RQ SLDQR DQG WKLV QXPEHU WHOOV XV H[DFWO\ZKLFK & WR SOD\ LQ ZKDW UHJLVWU\RFWDYH UDQJH 6DPHJRHV IRU DQ\RWKHU QRWH IRU H[DPSOH ' PHDQV WKDW WKLV 'QRWH LV LQ WKH & & UDQJH RU WKH WKLUG UDQJH 7KLV LV HVSHFLDOO\ LPSRUWDQW ZKHQ ZULWLQJ GRZQ PXVLF XVLQJ QRWDWLRQ EHFDXVH LW GHWHUPLQHV ZKDW NLQG RI FOHIV ZH ZLOO XVH WR EHVW FRYHU WKH UDQJH RI D SLHFH DQG PLQLPL]H WKH XVH RI OHGJHU OLQHV WKLV LV H[SODLQHG WKRURXJKO\ LQ +RZ WR 5HDG 0XVLF IRU %HJLQQHUV ERRN

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2Q)LJXUH \RX FDQ VHH DOO UHJLVWU\ UDQJHV RQ SLDQR 2QH UDQJH KDV WKH OHQJWK RI RQH RFWDYH ††VR WKH GLVWDQFH EHWZHHQ & DQG & LV H[DFWO\ RQH RFWDYH VDPH

ZLWK) ++ $ ' ++ ' (++ $ HWF 7KH GLVWDQFH EHWZHHQ & DQG & ZRXOG EH RFWDYHV * DQG* RFWDYHV HWF ,W ·V LPSRUWDQW WR UHPHPEHU KHUH WKDW & LV WKH VWDUWLQJ QRWH IUHTXHQF\ RI HDFK UDQJH DQG WKDW & QRWH LV FDOOHG WKH
PLGGOH & 2QJXLWDU LI WXQHG WR VWDQGDUG WXQLQJ WKLV QRWH LV IRXQG RQ WKH IUHW RI WKH UG * VWULQJ
:H XVH SLWFK WR GHWHUPLQH KRZ KLJK RU KRZ ORZ VRPHWKLQJ VRXQGV %XW WKHUH ZDV D SUREOHP EDFN LQ KLVWRU\ EHIRUH ;,; FHQWXU\ ZKHQ QRWHV ZHUH QRW IL[HG WR FHUWDLQ SLWFKHV SLWFK ZDV QRW VWDQGDUGL]HG DQG PXVLFLDQV ZRXOG MXVW SLFN
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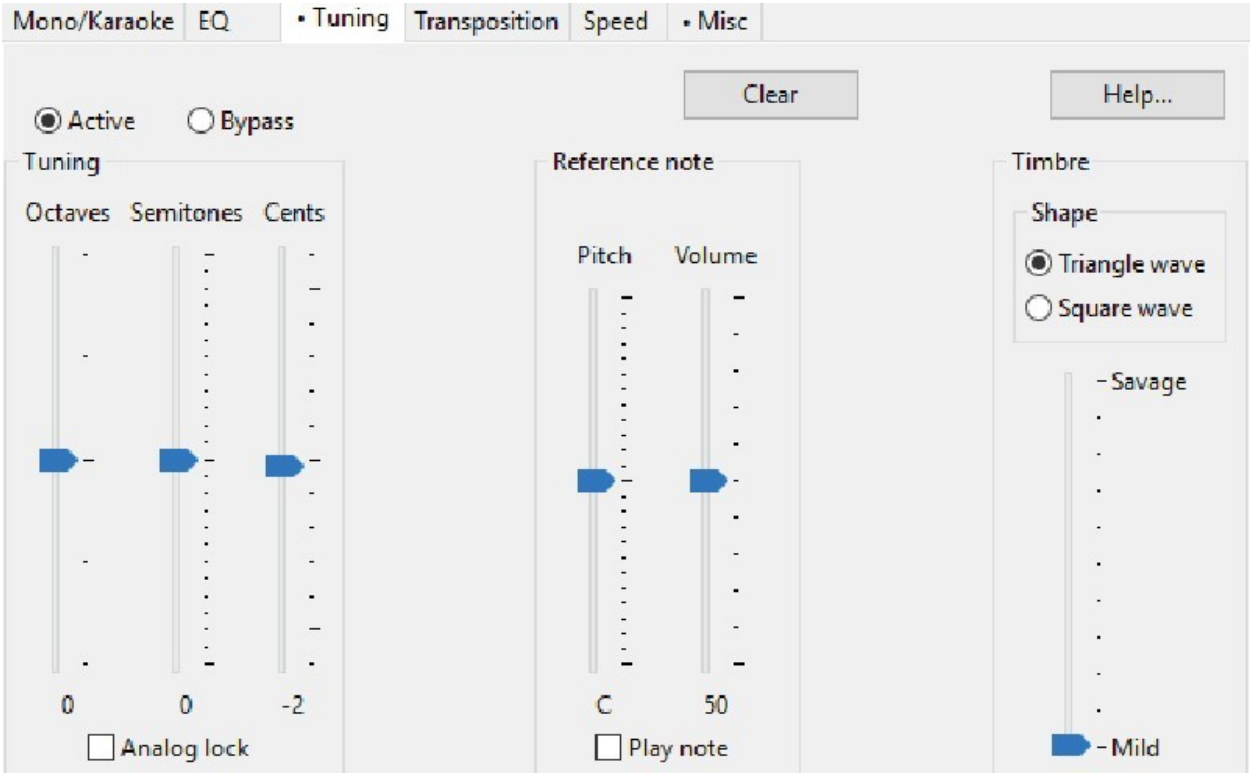
QRWH ZLWK RWKHU QRWHV EHLQJ VHW UHODWLYH WR LW 7KLV LV FDOOHG WKH 6Δ
WDQGDUG
SLWFK ♮ RU Δ&RQFHUW SLWFK0 ♮RVW LQVWUXPHQWV WRGD\ DUH WXQHG DFFRUGLQJ WR
WKLV
ΔGHIDXOW ♮ WXQLQJ 2QVWDQGDUGO\WXQHG JXLWDU IRU H[DPSOH $ DERYH PLGGOH & LV IRXQG RQ WKH WK IUHW RI WKH VW VWULQJ
6LQFH $ KDV WKH IUHTXHQF\ RI +] ZKDW IUHTXHQF\ ZRXOG DQ RFWDYH ORZHU ++ $ KDYH"
7KH DQVZHU LV +] DQG $ ZRXOG EH +]
7KLV WXQLQJ VWDQGDUG LV ZLGHO\ UHFRJQL]HG DQG XVHG EXW WKHUH DUH DOVR RWKHU WXQLQJ FKRLFHV XVHG E\ GLIIHUHQW RUFKHVWUDV DURXQG WKH ZRUOG PRVW RI ZKLFK UHYROYH DURXQG $ EHLQJ VHW WR GLIIHUHQW IUHTXHQFLHV VXFK DV +] +] +] HWF 7KHUH LV DQRWKHU W\SH RI SLWFK VWDQGDUG FDOOHG 6FLHQWLILF SLWFK RU 3KLORVRSKLFDO SLWFK ZKHUH WKH IRFXV LV SXW RQ WKH RFWDYHV RI &UDWKHU WKDQ RQ $,Q 6WDQGDUG SLWFK $ LV +] DQG & RU PLGGOH & LV +] EXW LQ 6FLHQWLILF SLWFK & LV DGMXVWHG VR WKDW LW LV HTXDO WR D ZKROH QXPEHU ++ +] DQG $ LV +] 7KLV SLWFK VWDQGDUG LV VRPHWLPHV IDYRUHG LQ VFLHQWLILF ZULWLQJV EHFDXVH LV D SRZHU RI ZKLFK LV YHU\ XVHIXO LQ WKH FRPSXWHU ELQDU\ V\VWHP DQG VHUYHV GLIIHUHQW SXUSRVHV

2FWDYH 6XEGLYLVLRQ

2QH RFWDYH FRQVLVWV RI ZKROH VWHSV RQH VWHS FRQVLVWV RI KDOI VWHSV DQG RQH KDOI VWHS FRQVLVWV RI XS WR FHQWV :KDW WKDW PHDQV LV WKDW IRU H[DPSOH ' DQG ' DUH RQH KDOI VWHS DSDUW EXW EHWZHHQ WKHP WKHUH DUH XS WR FHQWV &HQWV LQ PXVLF DUH W\SLFDOO\ XVHG WR H[SUHVV PLFURWRQHV ZKLFK DUH YHU\ VPDOO LQWHUYDOV +\VPDOOHU WKDQ D KDOI VWHS ZKLFK\RX FDQ DOVR FDOO D VHPLWRQH



)LJXUH 0RVW VRIWZDUH SURJUDPV WKDW ZRUN ZLWK VRXQG ILOHV DOORZ \RX WR FKDQJH WKH SLWFK LQ RFWDYHV VHPLWRQHV DQG HYHQ FHQWV

%HFRQG RQH VHPLWRQH UDWKHU WKDQ XVLQJ KHUW] DV D IUHTXHQF\ PHDVXUH XQLW ZKLFK LI \RX UHPHPEHU VKRZV WKH DPRXQW RI DLU SUHVVXUH ZDYHV SURGXFHG LQ D JLYHQ DPRXQW RI WLPH ZH PRUH RIWHQ XVH FHQWV ZKLFK DUH D ORJDULWKPLF PHDVXUH XVHG IRU PXVLFDO LQWHUYDOV ,W LV HQRXJK WR VD\ WKDW WKH\ DUH VLPSO\ PRUH FRQYHQLHQW DQG HDVLHU WR XVH IRU PXVLFLDQV +XPDQ HDU LV YHU\ VHQVLWLYH DV LW FDQ UHFRJQL]H XS WR RQO\ D IHZ FHQW GLIIHUHQFH EHWZHHQ WZR VXFFHVVLYH QRWHV

SLWFKHV EXW WKH LQWHUYDO RI RQH FHQW LV WRR VPDOO WR EH KHDUG EHWZHHQ WZR

VXFFHVVLYH QRWHV

<RXU LQVWUXPHQW FDQ EH LQ WXQH DQG VWLOO VRXQG D OLWWOH ELW RII DQG WKDW ¶V WKH FDVH

ZKHQ WKHUH ¶V D VPDOO SLWFK GLIIHUHQFH WKDW FDQ RQO\ EH PHDVXUHG LQ FHQWV

&RUUHFWLQJ WKHVH VPDOO GLIIHUHQFHV LV VRPHWLPHV FDOOHG ILQH WXQLQJ DQG WKH WXQHUV
WKDW\RX FDQ ILQG WRGD\ DOORZ IRU WKLV NLQG RI VXSHU DFFXUDWH WXQLQJ ZLWK HYHQ OHVV WKDQ RQH FHQW DFFXUDF\ 7KH PRUH ΔH[DFWO\ ǵ LQ WXQH\RXU LQVWUXPHQW LV WKH EHWWHU LW ZLOO VRXQG HVSHFLDOO\ RQ WKH UHFRUGLQJ 7KDW ¹V ZK\ LW LV LPSRUWDQW WR
NHHS LW LQ WXQH

:H ¹YH QRZ FRYHUHG WKH QRWHV DQG WKH QRWH FLUFOH %HIRUH ZH GLYH DQ\IXUWKHU LW LV HVVHQWLDO WKDW\RX XQGHUVWDQG DQG OHDUQ WKH LQWHUYDOV LQ PXVLF

0DVWHU 7KH ,QWHUYDOV

:KDW ,V DQ ,QWHUYDO LQ 0XVLF"

$Q LQWHUYDO LV D UHODWLRQVKLS EHWZHHQ WZR QRWHV ,W GHVFULEHV WKH KDUPRQLF
GLVWDQFH EHWZHHQ QRWHV ZLWK D XQLTXH VRXQG

(DFK LQWHUYDO KDV D XQLTXH VRXQG DQG D XQLTXH QDPH 7KH QDPHV RI WKH LQWHUYDOV FRPH IURP WKHLU SRVLWLRQ LQ GLDWRQLF VFDOHV PRUH RQ GLDWRQLF VFDOHV VRRQ ,Q WKDW VHQVH LQWHUYDOV FDQ EH HLWKHU

- 0DMRU
- PLQRU
- 3HUIHFW

0DMRU DQG PLQRU LQWHUYDOV DUH XVHG D ORW LQ :HVWHUQ PXVLF ZKLOH 3HUIHFW
LQWHUYDOV DUH JHQHUDOO\ XVHG PRUH LQ HWKQLF PXVLF DOO DURXQG WKH ZRUOG

0XVLF ,QWHUYDOV 6SHOOHG 2XW

7DNH D ORRN DW WKH QRWH FLUFOH DJDLQ 7KHUH ¹V DQ LQWHUYDO EHWZHHQ DQ\ RI WKH QRWHV
IURP WKH QRWH FLUFOH † \RX FDQ VWDUW RQ DQ\ QRWH DQG SOD\ DQ\ RWKHU QRWH LQFOXGLQJ LWVHOI DQG\RX ZLOO SOD\ DQ LQWHUYDO RI VRPH NLQG

,Q RUGHU WR VKRZ \RX DOO WKH LQWHUYDOV ZH QHHG WR ILUVW FKRRVH WKH 5RRW QRWH
ZKLFK FDQ EH DQ\ QRWH 7KH 5RRW QRWH LV WKH VWDUWLQJ QRWH LW LV WKH KDUPRQLF FHQWHU RI ZKDWHYHU FKRUG RU VFDOH \RX DUH XVLQJ ,Q WKLV H[DPSOH WKH QRWH & ZLOO EH XVHG DV WKH 5RRW

)LUVW ZH KDYH & WR &
<HV WKHUH ¶V DQ LQWHUYDO EHWZHHQ WKH 5RRW DQG WKH 5RRW WKH H[DFW VDPH QRWH SOD\HG
WZR WLPHV DQG LW ¶V FDOOHG 3HUIHFW 8QLVRQ

7KH QH[W QRWH & 'E LV D PLQRU QG DERYH & DQG DOVR D PDMRU WK EHORZ LW 7KLV LV DOVR WKH HTXLYDOHQW RI RQH VHPLWRQH 6

' LV D 0DMRU QG DERYH & DQG D PLQRU WK EHORZ $OVR WKH HTXLYDOHQW RI RQH WRQH 7

' (E LV D PLQRU UG DERYH & DQG D PDMRU WK EHORZ

(LV D 0DMRU UG DERYH & DQG D PLQRU WK EHORZ

) LV D 3HUIHFW WK DERYH & DQG D 3HUIHFW WK EHORZ
)RXUWKV DQG ILIWKV DUH VDLG WR EH ΔSHUIHFW ? UDWKHU WKDQ PDMRU RU PLQRU EHFDXVH WKH\ DUH WKH VDPH LQ WKH PDMRU DQG PLQRU VFDOHV DV ZHOO DV PRVW RWKHU GLDWRQLF VFDOHV
GRQ ¶W ZRUU\ LI \RX GRQ ¶W XQGHUVWDQG WKLV ULJKW QRZ

) *E LV $XJPHQWHG WK †† DOVR FDOOHG D 7ULWRQH †† DERYH & DQG D 7ULWRQH EHORZ LW
7KLV LV D VWUDQJH LQWHUYDO ,W LV KLJKO\ GLVVRQDQW DQG RIWHQ DYRLGHG ,W VRPHWLPHV IXQFWLRQV DV D VKDUS WK DQG RWKHU WLPHV LW LV D IODW 7KH WULWRQH LV DOVR WKH RQO\ LQWHUYDO WKDW LV WKH LQYHUVLRQ RI LWVHOI †† LI D QRWH LV D WULWRQH XS IURP DQRWKHU QRWH
WKHQ LW LV D WULWRQH GRZQ IURP LW DV ZHOO

*LV D 3HUIHFW WK DERYH & DQG D SHUIHFW WK EHORZ LW

* $E LV D PLQRU WK DERYH & DQG D PDMRU UG EHORZ

$ LV D 0DMRU WK DERYH & DQG D PLQRU UG EHORZ

$ %E LV D PLQRU WK DERYH & DQG D PDMRU QG EHORZ

% LV D 0DMRU WK DERYH & DQG D PLQRU QG EHORZ

$QG ODVWO\ ZH KDYH & ZKLFK LV D 3HUIHFW 2FWDYH LQWHUYDO DERYH URRW &

:H KDYH QRZ JRQH WKURXJK WKH IXOO QRWH FLUFOH

7KHUH DUH 0DMRU LQWHUYDOV PLQRU LQWHUYDOV 3HUIHFW LQWHUYDOV DQG WKDW ΔVWUDQJH ? LQWHUYDO †† WKH 7ULWRQH $XJPHQWHG WK RU IODW

,QWHUPVRI VHPLWRQHV

3HUIHFW 8QLVRQ &WR & LV VHPLWRQHV DSDUW

- PLQRU QG &WR& LV VHPLWRQH
- 0DMRU QG &WR' LV VHPLWRQHV
- PLQRU UG &WR' LV VHPLWRQHV
- 0DMRU UG &WR(LV VHPLWRQHV
- 3HUIHFW WK &WR) LV VHPLWRQHV
- 7ULWRQH &WR) LV VHPLWRQHV
- 3HUIHFW WK &WR* LV VHPLWRQHV
- PLQRU WK &WR* LV VHPLWRQHV
- 0DMRU WK &WR$ LV VHPLWRQHV
- PLQRU WK &WR$ LV VHPLWRQHV
- 0DMRU WK &WR% LV VHPLWRQHV
- 3HUIHFW 2FWDYH &WR& LV VHPLWRQHV

6RPHWLPHV ZH GHILQH LQWHUYDOV DERYH DQ RFWDYH 7KHVH DUH QDPHG E\ DGGLQJ WR ZKDWHYHU WKH QDPH ZDV LQ WKH ILUVW RFWDYH)RU H[DPSOH D PDMRU QG LQWHUYDO DQ RFWDYH KLJKHU EHFRPHV D PDMRU WK D PLQRU WK EHFRPHV D PLQRU WK DQG VR RQ

1RWH WKDW LQ PXVLF WKHRU\ WKH WHUPV 0ΔDMRU ÷ DQG 3ΔHUIHFW ÷ DUH XVXDOO\ FDSLWDOL]HG ZKLOH ΔPLQRU ÷ LVQ ΗW

,QWHUYDOV DUH XVHG WR GHILQH ERWK FKRUGV DQG VFDOHV EHFDXVH D SDUWLFXODU VHW RI LQWHUYDOV GHILQHV D XQLTXH VRXQG D XQLTXH KDUPRQLF VSDFH ,I\RX KDYH OLVWHG DOO RI WKH LQWHUYDOV WKDW DUH LQ D JLYHQ VFDOH RU FKRUG WKHQ \RX KDYH IXOO\ GHILQHG WKDW VFDOH RU FKRUG ,Q ODWHU VHFWLRQV\RX ΗOO VHH KRZ LQWHUYDOV DUH XVHG WR GHILQH FKRUGV DQG VFDOHV DQG KRZ LPSRUWDQW WKH\ DUH LQ PXVLF WKHRU\

,QYHUWHG ,QWHUYDOV :LWK ,QWHUYDO ([HUFLVH

%HJRQG WKH LQWHUYDO TXDOLW\ PDMRU PLQRU SHUIHFW DQG LWV QDPH WKHUH LV RQH PRUH SURSHUW\ RI LQWHUYDOV ZKLFK LV LPSRUWDQW WR XQGHUVWDQG

7DNH D ORRN DW WKH QRWH FLUFOH DJDLQ 1RWLFH WKDW LQWHUYDOV EHWZHHQ DQ\ QRWH FDQ JR XS RU WKH\ FDQ JR GRZQ 7KH\ FDQ EH HLWKHU

$VFHQGLQJORZHUQRWHLQSLWFKJRLQJWRDKLJKHUQRWHIRUH[DPSOH&WR'

'HVFHQGLQJ KLJKHU QRWH LQ SLWFKJRLQJ WR D ORZHU QRWH IRU H[DPSOH % WR $E
+DUPRQLF ZKHQ WZR RU PRUH QRWHV DUH SOD\HG VLPXOWDQHRXVO\
3OD\HG LQ 8QLVRQ WKH VDPH QRWH SOD\HG WZLFH

<RX FDQ VD\ WKDW % LV D 0DMRU LQWHUYDO XS IURP * EXW WKDW (E LV D 0DMRU WKLUG GRZQ IURP * 6R WKDW PHDQV WKDW LQWHUYDOV FDQ EH LQYHUWHG LI % LV D 0DMRU XS IURP * WKHQ LW LV DOVR D GLIIHUHQW LQWHUYDO LQ WKLV FDVH D 0LQRU WK GRZQ IURP WKH * RI WKH QH[W RFWDYH

,Q WKLV ZD\ LQWHUYDOV FRPH LQ SDLUV (YHU\ UHODWLRQVKLS FDQ EH GHILQHG E\ WZR GLIIHUHQW LQWHUYDOV RQH XS DQG RQH GRZQ 7KDW VKRXOG H[SODLQ WKH LQWHUYDOV LQ SDUHQWKHVLV IURP WKH LQWHUYDOV OLVW

7R H[SODLQ LW IXUWKHU LQWHUYDO LV D UHODWLYH SURSHUW\ RI QRWHV)RU H[DPSOH ZH ZDQW WR ILJXUH RXW ZKDW LQWHUYDO LW LV IURP $ WR & :H KDYH SRVVLEOH VROXWLRQV

& QRWH LV D SDUWLFXODU LQWHUYDO DZD\ IURP $,I WKH & QRWH LV KLJKHU LQ SLWFK WKDQ $ WKHQ WKLV LQWHUYDO LV D 0DMRU XS IURP $ DQG WKDW & LV D 0LQRU XS IURP $ "IVPLQRU LQWHUYDO

$! & PLQRU DVFHQGLQJ LQWHUYDO

%XW LI WKH QRWH & LV ORZHU LQ SLWFK WKDQ $ WKHQ WKLV LV D GHVFHQGLQJ LQWHUYDO :H FDQ QRZ VD\ WKDW & LV PDMRU GRZQ IURP $

$! & PDMRU GHVFHQGLQJ LQWHUYDO

:KHQ ILJXULQJ RXW LQWHUYDOV XQOHVV ZH GR "IWKDYH DQ\ LQIRUPDWLRQ RQ ZKDW NLQG RI LQWHUYDO LW LV DVFHQGLQJ GHVFHQGLQJ RU KDUPRQLF ZH DOZD\V WUHDW WKH ORZHU QRWH DV WKH URRW QRWH DQG ZH FRXQW LQWHUYDOV FORFNZLVH RQ WKH QRWH FLUFOH IURP WKH ORZHVW QRWH

7U\ WR GR WKLV \RXUVHOI DQG VHH KRZ HDV\ LW LV +HUH DUH VRPH LQWHUYDOV WR ILJXUH RXW

- (! & DVFHQGLQJ ††"
- (! & GHVFHQGLQJ ††"
- '!$ DVFHQGLQJ †† WKH VKDUS V\PERO WHOOV \RX WKDW WKLV LV DQ DVFHQGLQJ LQWHUYDO ††"
- ' !%E GHVFHQGLQJ †† DJDLQ WKH IODW V\PERO LQGLFDWHV WKDW WKLV LV D GHVFHQGLQJ LQWHUYDO ††"
- *E ! $E ††"

,W LV LPSRUWDQW WR UHPHPEHU WKDW ZKHQ DQ LQWHUYDO LV DVFHQGLQJ \RX ZLOO VHH XVH VKDUS V\PERO DQG ZKHQ LW LV GHVFHQGLQJ \RX ZLOO XVH IODW E V\PERO

/LNH , VDLG EHIRUH WKHUH LV D GLIIHUHQW LQWHUYDO SDLU IRU HYHU\ QRWH RI WKH QRWH
FLUFOH <RX FDQ XVH WKH QRWH FLUFOH DQG FRXQW WKH LQWHUYDOV WKHUH 7KH DQVZHUV ZLOO
EH SURYLGHG DW WKH HQG RI WKLV ERRN

&KURPDWLF DQG 'LDWRQLF ,QWHUYDOV

$OO RI WKH LQWHUYDOV VKRZQ VR IDU IDOO XQGHU RQH ODUJH JURXS RI &KURPDWLF LQWHUYDOV 7KH WHUP &KURPDWLF WHOOV XV WKDW WKLV LV D VHW RI $// LQWHUYDOV WKDW
H[LVW EHWZHHQ WKH QRWHV WKDW DUH XVHG LQ WKH FRQYHQWLRQDO WRQDO PXVLF WRGD\ VDPH
DV KRZ WKH FKURPDWLF VFDOH LV WKH VHW RI DOO QRWHV WKDW H[LVW LQ WRGD\ 'V WRQH
PXVLF V\VWHP

:LWKLQ WKRVH &KURPDWLF LQWHUYDOV WKHUH LV D VSHFLILF JURXS RI LQWHUYDOV FDOOHG
'LDWRQLF LQWHUYDOV ZKLFK DUH TXLWH LPSRUWDQW 'LDWRQLF LQWHUYDOV DUH WKRVH
LQWHUYDOV WKDW WKH 0DMRU VFDOH LV FRPSULVHG RI 0DMRU VFDOH LV WKH PRVW SRSXODU
VFDOH LQ PXVLF DQG DOO RWKHU VFDOHV DUH PHDVXUHG DJDLQVW LW LQ RQH ZD\ RU DQRWKHU

0DMRU VFDOH WKH PRVW LPSRUWDQW VFDOH WR OHDUQ LV D 'LDWRQLF VFDOH \RX ZLOO VRRQ
ILQG RXW ZKDW WKLV PHDQV MXVW EHDU ZLWK PH IRU D ELW DQG WKDW 'V ZK\ DOO
LQWHUYDOV
WKDW PDNH XS WKH 0DMRU VFDOH DUH FDOOHG 'LDWRQLF LQWHUYDOV

,Q WKDW VHQVH 'LDWRQLF LQWHUYDOV DUH 3HUIHFW 8QLVRQ &WR& 0DMRU &WR
' 0DMRU UG &WR (3HUIHFW WK &WR) 3HUIHFW WK &WR * 0DMRU WK &WR
$ 0DMRU WK &WR %

7KHVH 'LDWRQLF LQWHUYDOV IDOO XQGHU &KURPDWLF LQWHUYDOV DV D VSHFLDO JURXS RI
LQWHUYDOV ZKLFK PDNH XS WKH 0DMRU VFDOH ,Q RWKHU ZRUGV DOO RI WKHVH
LQWHUYDOV
DSSHDU LQ WKH 0DMRU VFDOH

$XJPHQWHG DQG 'LPLQLVKHG ,QWHUYDOV

%H\RQG 0DMRU PLQRU DQG 3HUIHFW LQWHUYDOV WKHUH DUH DOVR 'LPLQLVKHG DQG $XJPHQWHG LQWHUYDOV 7KHVH LQWHUYDOV DUH LQ D ZD\ KLGGHQ EHFDXVH WKH\ DUH XVHG LQ WKHRU\ IRU VKRZLQJ WKH LQWHUYDO VWUXFWXUH RI RQO\ WKRVH VFDOHV DQG FKRUGV WKDW UHTXLUH WKH XVH RI WKHP :KDW GR , PHDQ E\ WKLV"

$OO VFDOHV DQG FKRUGV DUH PDGH XS RI LQGLYLGXDO QRWHV DQG LQWHUYDOV EHWZHHQ
WKRVH QRWHV :H XVH WKLV LQWHUYDO VWUXFWXUH WR ZULWH RXW WKH QRWHV DQG QDPH DQ\
VFDOH RU FKRUG +RZHYHU DW FHUWDLQ WLPHV GHSHQGLQJ RQ WKH VFDOH ZH KDYH WR DELGH E\ FHUWDLQ UXOHV LQ PXVLF WKHRU\ZKHQ LW FRPHV WR ZULWLQJ RXW WKH QRWHV DQG LQWHUYDOV 7KDW 'V XVXDOO\ZKHQ WKHVH WKHRUHWLFDO LQWHUYDOV FRPH LQWR SOD\

:H ZLOO JHW WR WKHVH UXOHV VRRQ IRU QRZ XQGHUVWDQG WKDW GLPLQLVKHG LQWHUYDOV
ORZHU RU QDUURZ WKH PLQRU DQG 3HUIHFW LQWHUYDOV E\ RQH VHPLWRQH
$XJPHQWHG LQWHUYDOV H[SDQG RU ZLGHQ WKH 0DMRU DQG 3HUIHFW LQWHUYDOV E\ RQH VHPLWRQH

CHROMATIC INTERVALS					
Major, minor and Perfect Intervals	Abbreviation	Diminished and Augmented Intervals	Abbreviation	Distance	In terms of notes
Perfect Unison	P1 or U	Diminished 2nd	dim2	0 semitones	C to C
minor 2nd	m2	Augmented Unison	AugU or Aug1	1 semitones	C to C#
Major 2nd	M2	Diminished 3rd	dim3	2 semitones	C to D
minor 3rd	m3	Augmented 2nd	Aug2	3 semitones	C to D#
Major 3rd	M3	Diminished 4th	dim4	4 semitones	C to E
Perfect 4th	P4	Augmented 3rd	Aug3	5 semitones	C to F
		Diminished 5th	dim5 or Tritone	6 semitones	C to Gb
		Augmented 4th	Aug4 or Tritone	6 semitones	C to F#
Perfect 5th	P5	Diminished 6th	dim6	7 semitones	C to G
minor 6th	m6	Augmented 5th	Aug5	8 semitones	C to G#
Major 6th	M6	Diminished 7th	dim7	9 semitones	C to A
minor 7th	m7	Augmented 6th	Aug6	10 semitones	C to A#
Major 7th	M7	Diminished Octave	dim8 or dimO	11 semitones	C to B
Perfect Octave	P8 or O	Augmented 7th	Aug7	12 semItones	C to C

7DEOH &RPSOHWH OLVW RI &KURPDWLF LQWHUYDOV

$ FRXSOH RI WKLQJV WR QRWH KHUH

'LPLQLVKHG DQG $XJPHQWHG LQWHUYDOV DUH HTXLYDOHQW WR WKHLU 0DMRU PLQRU DQG

3HUIHFWLQWHUYDOFRXQWHUSDUWV † WKH\DUHWKHVDPHGLVWDQFH EXWKDYHGLIIHUHQW QDPH

)RU H[DPSOH GLPLQLVKHG WK DQG 0DMRU UG DUH SK\VLFDOO\ GLVWDQFH ZLVH WKH VDPH LQWHUYDOV 7KH QDPH ZKLFK ZLOO EH XVHG IRU LQWHUYDOV LV XVXDOO\ LQ WKH 0DMRU PLQRU DQG 3HUIHFW FROXPQ EXW LQ VRPH LQVWDQFHV GHSHQGLQJ RQ WKH VFDOH RU D FKRUG WKDW LQWHUYDO LV D SDUW RI ZH ZLOO KDYH WR XVH LWV DOWHUQDWLYH ++ GLPLQLVKHG DXJPHQWHG QDPH

1RWLFH WKDW 0DMRU PLQRU DQG 3HUIHFW LQWHUYDOV ODFN RQH LQWHUYDO ZLWK WKH GLVWDQFH RI

VHPLWRQHV VHPLWRQHV DUH HTXDO WR WRQH VR WKLV LQWHUYDO KDV WRQHV DQG WKDW ++V

ZK\LW ++V FRPPRQO\FDOOHG 7 ΔULWRQH 7 ?KLVLVD GLPLQLVKHG $XJPHQWHG LQWHUYDO FDQ EH HLWKHU DQG LW LV WKH RQO\ LQWHUYDO IURP WKLV FROXPQ ZKLFK DSSHDUV QRW LQ WKH 0DMRU VFDOH LWVHOI EXW LQ WKH PRGHV RI WKH 0DMRU VFDOH DOVR FDOOHG 'LDWRQLF PRGHV ZKLFK ZH ++OO JHW WR LQ 3DUW RI WKLV ERRN

'LPLQLVKHG LQWHUYDOV DUH XVXDOO\ VKRZQ ZLWK D ORZHU FDVH ILUVW OHWWHU ZKLOH

$XJPHQWHG LQWHUYDOV XVXDOO\ KDYH DQ XSSHU FDVH ILUVW OHWWHU

8QGHUVWDQGLQJ LQWHUYDOV ++ WUXO\ XQGHUVWDQGLQJ WKHP DQG KRZ WKH\ UHODWH WR RQH
DQRWKHU DQG OHDUQLQJ WR KHDU DQG XVH WKHP ++ WDNHV D OLIHWLPH ,Q D VHQVH DOO RI WKH RWKHU OHDUQLQJ DERXW VFDOHV DQG NH\V DQG FKRUGV LV D ZD\ WR PDNH VHQVH RI WKH ZLGHU SHQ VSDFH RI WKH QHWZRUN RI LQWHUYDOV LQ WKH WRQH VSVWHP ,W LV YHU\ ZHOO ZRUWK DOZD\V NHHSLQJ DQ H\H RQ \RXU FRPIRUW OHYHO ZLWK WKLV LGHD DQG WUDLQLQJ \RXU HDU WR UHFRJQL]H WKHP

7KH %XLOGLQJ %ORFNV RI 0XVLF ++ +DUPRQ\ 0HORG\ DQG 5K\WKP

:H VD\ WKDW PXVLF FRQVLVWV RI WKUHH WKLQJV

+DUPRQ\
0HORG\ DQG
5K\WKP

+DUPRQ\ DQG PHORG\ ERWK GHVFULEH WKH UHODWLRQVKLS EHWZHHQ SLWFKHV DOWKRXJK
GLIIHUHQWO\ ZLWKRXW UHVSHFW WR WKHLU GXUDWLRQ ZKHUHDV UK\WKP GHVFULEHV WKH
UHODWLRQVKLS EHWZHHQ VRXQGV DQG WKHLU GXUDWLRQV ZLWKRXW UHVSHFW WR WKHLU SLWFKHV

+DUPRQ\ LV ZKDW KDSSHQV ZKHQ ZH FRPELQH QRWHV LQ PXVLF ,I \RX DGG RQH RU PRUH QRWHV WR DQRWKHU QRWH DQG \RX SOD\ WKHP DW WKH VDPH WLPH RU LQ D VHTXHQFH

WKHQ\RX ¹YH DGGHG KDUPRQ\ WR WKH RULJLQDO QRWH 7KLV LV RQH ZD\ WR WKLQN DERXW WKH KDUPRQ\

+DUPRQ\ LV WKH YHUWLFDO UHODWLRQVKLS EHWZHHQ SLWFKHV ,W LV D VWUXFWXUH OLNH D
ODWWLFH D QHWZRUN :KHQ \RX XQGHUVWDQG WKH UHODWLRQVKLS EHWZHHQ WZR RU PRUH
QRWHV KDUPRQLFDOO\ \RX DUH WUHDWLQJ WKHP DV WKRXJK WKH\ZHUH KDSSHQLQJ DW WKH VDPH WLPH HYHQ LI WKH\ DUH KDSSHQLQJ RQH DIWHU DQRWKHU ,W LV SRVVLEOH LQ WKLV ZD\ WR WKLQN DERXW WKH ZD\ WKH RYHUDOO KDUPRQLF VWUXFWXUH RI D SLHFH PRYHV DQG FKDQJHV +DUPRQ\ LV WKH WKLQJ WKDW PRVW SHRSOH PHDQ ZKHQ WKH\ WDON DERXW WKHRU\

0HORG\ LV OLNH KDUPRQ\ LQ WKDW LW GHVFULEHV WKH UHODWLRQVKLS EHWZHHQ SLWFKHV EXW
LW LV D KRUL]RQWDO UDWKHU WKDQ YHUWLFDO XQGHUVWDQGLQJ :KLOH VWLOO D PDWWHU RI
UHODWLYH VWUXFWXUH PHORG\ LV DOO DERXW WKH ZD\ WKDW QRWHV DFW LQ VHTXHQFH VR WKDW
WKH VDPH QRWHV SODYHG LQ GLIIHUHQW RUGHUV KDYH GLIIHUHQW PHORGLF YDOXHV HYHQ LI WKRVH QRWHV WDNHQ WRJHWKHU PLJKW KDYH WKH VDPH KDUPRQLF VWUXFWXUH

0HORG\ FRXOG EH FRQVLGHUHG VLPSO\ DV SDUW RI WKH KDUPRQ\ ZKLFK IRFXVHV RQ
KRZ QRWHV VRXQG WRJHWKHU LQ D VHTXHQFH 8VXDOO\ZH DGG KDUPRQ\ WR D PHORG\
OLQH ZKLFK SXWV WKH PHORG\ LQ D FHUWDLQ FRQWH[W DQG PDNHV LW VRXQG ULFKHU RU
ZH PD\ DGG PHORG\ WR WKH H[LVWLQJ KDUPRQ\

5K\WKP LV WKH UHODWLRQVKLS LQ WLPH EHWZHHQ QRWHV RU VRXQGV LQ JHQHUDO
UHJDUGOHVV RI SLWFK UHODWLRQVKLSV 5K\WKP GHVFULEHV WKH ZD\ VRXQGV SXOVH RU GRQ¹W SXOVH WKHLU VSHHG DQG UHJXODULW\ 5K\WKPLF VWUXFWXUHV GHVFULEH WKH ZD\ SLHFHV PRYHV DFFRUGLQJ WR D SDUWLFXODU NLQG RI WLPH EDVHG GLYLVLRQ :KLOH QRW JHQHUDOO\ WKH IRFXV RI DV PXFK WKHRUHWLFDO DWWHQWLRQ UK\WKP LV HTXDOO\ DV
LPSRUWDQW $Q XQGHUVWDQGLQJ RI WKH UROH RI WLPH DQG GXUDWLRQ LQ PXVLF LV
HVVHQWLDO VLQFH PXVLF LV DIWHU DOO D WLPH EDVHG DUW IRUP 7KDW¹V ZK\ WKHUH LV D
ZKROH VHFWLRQ GHGLFDWHG WR UK\WKP LQ WKLV ERRN

:KDW 0DNHV D *UHDW 0HORG\"

$ VWURQJ PHORG\ LV HVVHQWLDO WR JRRG PXVLF ,W LV WKH GLIIHUHQFH EHWZHHQ EULQJLQJ

VRPHRQH "HV HDU RQ D ULGH DQG GULYLQJ ULJKW SDVW LW *RRG PHORG\ LV DOO DERXW WHOOLQJ D VWRU\ ,W PRYHV DQG XQIROGV EXLOGV DQG UHOHDVHV ,W SOD\V DJDLQVW DQG
ZLWK WKH FKRUG VWUXFWXUH RI D VRQJ WKH KDUPRQ\ LQ D ZD\ WKDW PDNHV SHRSOH ZDQW WR KHDU LW

*RRG PHORG\ LV KDUG WR XQGHUVWDQG DQG HYHQ KDUGHU WR SUHVFULEH UXOHV IRU UHDG LPSRVVLEOH EXW LQJHQHUDO ZH VD\ WKDW D PHORG\ FRQVLVWV RI WHQVLRQ DQG UHOHDVH 7KDW PHDQV WKDW D JRRG PHORG\ PRYHV DZD\ IURP WKH KDUPRQLF FHQWHU RI WKH PXVLF EXLOGLQJ WHQVLRQ DQG WKHQ PRYHV EDFN LQ VRPH LQWHUHVWLQJ ZD\ UHOHDVLQJ WKDW WHQVLRQ

7R WHOO D VWRU\ LV WR FUHDWH DQ DUF 7R ULVH DQG WR IDOO $QG WKDW ¶V ZKDW D JRRG
PHORG\ GRHV LW EHJLQV VRPHZKHUH DQG ZKLOH LW XVXDOO\ IROORZV WKH VWUXFWXUH RI WKH FKRUGV LW GRHV VR LQ D ZD\ WKDW FUHDWHV PRYHPHQW DQG GUDPD WKDW PDNHV D OLWWOH IULFWLRQ EHWZHHQ WKH VLQJOH QRWHV LQ WKH PHORG\ DQG WKH VWUXFWXUH RI WKH
FKRUGV LWV KDUPRQLF VWUXFWXUH ,Q PRVW PXVLF WKLV LV IROORZHG E\ VRPH NLQG RI UHOHDVH LQ ZKLFK WKH UHOD WLRQVKLS EHWZHHQ WKH VLQJOH QRWHV DQG WKH FKRUGV LV
DJDLQ HDV\ FRQVRQDQW DQG VWDEOH

7KH &RQFHSW RI 5RRW 1RWH

7KLV FRQFHSW LV TXLWH LPSRUWDQW LQ PXVLF WKHRU\ DQG ZH ¶UH JRLQJ WR XVH LW D ORW LQ WKH IROORZLQJ SDJHV VR LW LV ZRUWK H[SODLQLQJ QRZ

7KH URRW QRWH RI D FKRUG LV WKH QRWH †† XVXDOO\ WKH ORZHVW QRWH LQ WKH
FKRUG RU FKRUG RU WKH ΔEDVV ÷ QRWH EXW LW GRHVQ ¶W KDYH WR EH †† WKDW LV XVHG WR
GHILQH WKH LQWHUYDOOLF UHODWLRQVKLSV LQ WKH UHVW RI WKH FKRUG ,Q RWKHU
ZRUGV DOO RI WKH RWKHU QRWHV DUH GHILQHG DV LQWHUYDOV UHODWLQJ EDFN WR WKDW
RQH URRW
QRWH

7KH URRW QRWH LV WKH ILUVW WKLQJ WKDW WKH QDPH RI D FKRUG RU D FDOH OLVWV VR WKDW LI
VRPHRQH LV WDONLQJ DERXW D 'PLQRU ᵂᴷ FKRUG WKHQ \RX NQRZ WKDW WKH ' LV WKH
URRW RI WKDW FKRUG DQG WKH UHVW RI WKH FKRUG LV GHILQHG UHODWLYH WR WKDW 'QRWH
,I
VRPHRQH LV WDONLQJ DERXW D * PDMRU FDOH WKHQ \RX NQRZ WKDW WKH * LV WKH URRW
QRWH RI WKDW FDOH DQG WKHQ WKH UHVW RI FDOH QRWHV DUH GHILQHG UHODWLYH WR WKDW
VWDUWLQJ* QRWH

3DUW

0DVWHULQJ
6FDOHV DQG 0RGHV

:KDW ,V D 6FDOH LQ 0XVLF"

6FDOHV DUH VRPH RI WKH PRVW LPSRUWDQW WKLQJV LQ PXVLF ,Q D FHUWDLQ VHQVH WKH HQWLUH KDUPRQLF DQG PHORGLF VWUXFWXUH RI D SLHFH RI PXVLF FDQ EH GHVFULEHG ZLWK UHVSHFW WR VFDOHV 7KH\ FDQ EH XVHG WR JHQHUDWH FKRUGV DQG FKRUG SURJUHVVLRQV DQG FDQ GHILQH DQG SURGXFH PHORGLF LGHDV WR EH XVHG RYHU WKRVH FKRUGV 7KH\ FDQ EH XVHG WR FRPSRVH FRPSOLFDWHG ZRUNV EXW DOVR WR LPSURYLVH PXVLF HYHQ DGYDQFHG PXVLF ZLWK OLWWOH HIIRUW

3XW DV VLPSO\ DV SRVVLEOH D VFDOH LV DQ DEVWUDFW FROOHFWLRQ RI QRWHV DQG WKH
UHODWLRQVKLSV EHWZHHQ WKRVH QRWHV RU SLWFKHV

,W LV D FROOHFWLRQ DQG QRW D VHTXHQFH EHFDXVH LW GRHVQ ¶W H[LVW WLPH ++ LW GRHVQ ¶W
KDYH DQ RUGHU DQG LW GRHVQ ¶W LPSO\ DQ\SDUWLFXODU PHORGLF DUUDQJHPHQW ,W LV MXVW
D VHW RI UHODWLRQVKLSV EHWZHHQ QRWHV WKDW GHILQHV D KDUPRQLF VSDFH

,W LV DEVWUDFW EHFDXVH LW LV QRW WLHG WR DQ\SDUWLFXODU DFWXDO DUUDQJHPHQW RI QRWHV
++ LW GRHVQ ¶W WHOO \RX WR SOD\ WKH QRWH LQ D VFDOH RU WKH QRWH LQ D VFDOH DOLW
GRHV LVJLYH \RX D VHW RI RQHV WKDW GHILQH D VSDFH LQ ZKLFK \RX FDQ SOD\

,W LVQ ¶W QHFHVVDU\ WR SOD\ DOO RI WKH QRWHV LQ ZKDWHYHU VFDOH \RX ¶UH XVLQJ DQG LW
LVQ ¶W QHFHVVDU\ WR SOD\ RQO\ WKRVH QRWHV MXVW WR XVH WKH VFDOH DV D VRUW RI
JHQHUDO
FDWHJRU\ 6FDOHV DUH ORRVH FKDUDFWHUL]DWLRQV RI KDUPRQLF PDWHULDO PRUH OLNH
D
WHQGHQF\ DQG OHVV OLNH D UXOH

%HFDXVH VFDOHV DUH DEVWUDFW WKH\ GRQ¶W GHSHQG RQ DQ\ SDUWLFXODU H[SUHVVLRQ ,Q
RWKHU ZRUGV WKH\ DUH LQ WKH EDFNJURXQG DV D KLJKHU PRUH JHQHUDO OHYHO WKDQ WKH DFWXDO QRWHV RI WKH PXVLF

<RX FDQ SOD\ D /HG =HSSHOLQ VROR RU \RX FDQ SOD\ D 6WHYLH 5D\ 9DXJKDQ VROR DQG WKH\ ZLOO EH FRPSOHWHO\ GLIIHUHQW WKLQJV EXW WKH\ ZLOO ERWK EH XVLQJ WKH PLQRU SHQWDWRQLF VFDOH %HFDXVH RI WKLV VFDOHV DUH XVHIXO WRROV IRU XQGHUVWDQGLQJ
ZKDW VRPHRQH LV GRLQJ PXVLFDOO\ DQG IRU NQRZLQJ ZKDW \RX ZDQW WR GR
PXVLFDOO\ VLQFH WKH\ DOORZ \RX WR NQRZ LQ JHQHUDO ZKDW LV JRLQJ RQ LQ WKH PXVLF DQG ZKDW ZLOO KDSSHQ LI\RX IRU LQVWDQFH SOD\ D SDUWLFXODU VHULHV RI QRWHV RYHU D SDUWLFXODU FKRUG

6FDOHV FRPH LQ PDQ\ IRUPV VRPH KDYH QRWHV VRPH KDYH VRPH KDYH PRUH EXW DOO RI WKHP GHILQH D URRW ZKLFK LV WKH FHQWHU RI KDUPRQ\ DQG PHORG\ DQG D VHW RI UHODWLRQVKLSV EHWZHHQ WKH UHVW RI WKH QRWHV LQ WKH VFDOH DQG WKDW URRW

$OVR DOO VFDOHV KDYH WKHLU RZQ VFDOH IRUPXOD FRQVLVWLQJ RI WRQHV ZKROH VWHSV
DQG VHPLWRQHV KDOI VWHSV 6LPSO\ E\ NQRZLQJ WKH VFDOH IRUPXOD LW LV YHU\ HDV\ WR ILJXUH RXW WKH QRWHV RI DQ\ VFDOH DQG SOD\ WKHP RQ DQ\ LQVWUXPHQW DV ZH ¶OO VRRQ VHH

6FDOHV DUH XVHG WR GHILQH FKRUGV ZKLFK IRUP WKH KDUPRQLF VWUXFWXUH RI D VRQJ DQG DOVR WR FRPSRVH PHORGLHV ZKLFK FRQVLVW RI XVXDOO\ VLQJOH QRWH OLQHV
SOD\HG RYHU WRS RI WKDW KDUPRQLF VWUXFWXUH 7KH\ DUH DOVR XVHG WR FUHDWH
KDUPRQLHV ZKLFK RFFXU ZKHQ PRUH WKDQ RQH VLQJOH QRWH OLQH LV SOD\HG WRJHWKHU 7KH EHVW ZD\ WR VWDUW XQGHUVWDQGLQJ VFDOHV LV WR VWDUW ZLWK WKH FKURPDWLF VFDOH

7KH 0DVWHU 6FDOH

7KH PRVW IXQGDPHQWDO VFDOH LQ :HVWHUQ PXVLF LV WKH &KURPDWLF VFDOH ,W LV WKH PDVWHU VFDOH 7KH FKURPDWLF VFDOH FRQWDLQV DOO WZHOYH QRWHV LQ HYHU\ RFWDYH DQG VR LQ D VHQVH LW LV WKH VHW RI DOO RWKHU VFDOHV (YHU\ FKRUG DQG HYHU\ VFDOH LV FRQWDLQHG
LQ WKH FKURPDWLF VFDOH

%HFDXVH WKH FKURPDWLF VFDOH LV VR ODUJH LW LV D YHU\ XVHIXO ZD\ RI WKLQNLQJ DERXW WKH RYHUDOO KDUPRQLF ODQGVFDSH (YHU\WKLQJ WKDW \RX FDQ SOD\ DV ORQJ DV \RX DUH

LQWXQH KDVVRPH NLQG RI UHODWLRQVKLS WR HYHU\WKLQJ HOVH DQG WKH FKURPDWLF VFDOH
LV WKH VHW RI DOO RI WKRVH UHODWLRQVKLSV 7KH FKURPDWLF VFDOH GRHV QRW KDYH D NH\ LWVHOI LW LV WKH VHW RI DOO NH\V PRUH RQ NH\V ODWHU

%XW EHFDXVH LW LV VR GHPRFUDWLF DQG GHFHQWUDOL]HG WKH FKURPDWLF VFDOH LVQ ¶W
DOZD\V XVHIXO ,W LV YHU\ DEVWUDFW DQG LW ¶V QRW PXVLFDO

6RPHWLPHV †† PRVW RI WKH WLPH †† \RX GRQ ¶W ZDQW WR SOD\ MXVW DQ\ QRWH LQ DQ\
NH\ DW DQ\ WLPH 6RPHWLPHV †† DJDLQ PRVW RI WKH WLPH †† \RX ZDQW WR FXW WKH
FKURPDWLF VFDOH XS GHILQH D VOLJKWO\ RU UDGLFDOO\ PRUH OLPLWHG KDUPRQLF DQG
PHORGLF VSDFH 7KDW ¶V ZKHQ DOO RI WKH RWKHU VFDOHV EHFRPH XVHIXO

&RQVLGHULQJ QRWHV SHU RFWDYH WKH FKURPDWLF VFDOH LV EURNHQ HYHQO\ LQWR
KDOI VWHSV + RU ZKROH VWHSV 7KH QRWHV RI WKH FKURPDWLF VFDOH DUH VLPSO\ DOO
QRWHV IURP WKH QRWH FLUFOH LQ WKH VDPH RUGHU

,W LV YHU\ HDV\ WR SOD\ D FKURPDWLF VFDOH DQG LW ¶V SDUWLFXODUO\ JRRG WR XVH DV
D
WHFKQLFDO H[HUFLVH HVSHFLDOO\ IRU EHJLQQHUV ZKR DUH JHWWLQJ XVHG WR
WKHLU
LQVWUXPHQW -XVW WDNH D ORRN DW)LJ DJDLQ DQG \RX ¶OO VHH KRZ LW ¶V ODLG RXW
RQ
SLDQR 7R SOD\ LW \RX FDQ VWDUW RQ DQ\ QRWH LW GRHVQ ¶W KDYH WR EH $ DQG MXVW
SOD\
DOO RI WKH QRWHV LQ RUGHU DVFHQGLQJ RU GHVFHQGLQJ XQWLO \RX JHW WR WKH RFWDYH

-XVW DV XQGHUVWDQGLQJ LQWHUYDOV LV D OLIHORQJ SURMHFW PDNLQJ VHQVH RXW RI WKH
ZLGH
DUUD\ RI SRVVLEOH VFDOHV DQG WKHLU LQWHUDFWLRQV LV DV ZHOO ,W LV XVHIXO
KRZHYHU
ZKHQ XQGHUWDNLQJ WKDW SURMHFW WR UHPHPEHU WKH SODFH RI WKH FKURPDWLF
VFDOH ,W
FRQWDLQV DOO RI WKHP LW GHPRFUDWL]HV LW VSUHDGV WKH KDUPRQ\ DQG PHORG\ ZLGH
RSHQ DQG LW DOORZV \RX WR GR YLUWXDOO\ DQ\WKLQJ \RX ZDQW WR /HDUQLQJ WR XVH WKDW
IUHHGRP UHVSRQVLEO\ LV RQH RI WKH WKLQJV WKDW VHWV JUHDW SODHUV DSDUW IURP
WKH
PHDQ

7\SHV RI 6FDOHV

7KHUH DUH EDVLFDOO\ RQO\ D IHZ W\SHV RI VFDOHV 2QH RI WKHP ZH KDYH MXVW FRYHUHG
†† WKH FKURPDWLF VFDOH 7KH FKURPDWLF VFDOH LV WKH VHW RI DOO RWKHU VFDOHV ,W LV
WKH

PDVWHU VFDOH %XW LW GRHVQ ¶W GHILQH D GLVWLQFW KDUPRQLF VSDFH EHWZHHQ GLYLVLRQ
RI KDUPRQ\ LQWR HTXDO SDUWV)RU WKDW \RX QHHG VFDOHV ZLWK IHZHU WKDQ QRWHV LQ WKHP

&RPPRQO\ WKHUH DUH RWKHU VFDOHV W\SHV WKDW PDNH WKH IRXQGDWLRQ RI KDUPRQ\ DQG WKRVH W\SHV EUHDN XS LQWR D IHZ RWKHUV

)LUVW WKHUH DUH QRWH VFDOHV 7KHVH DUH FDOOHG ΔSHQWDWRQLF ÷ VFDOHV PHDQLQJ Δ SHU RFWDYH 7 ÷KH YDULDWLRQV RI WKRVH VLPSOH VFDOHV DUH HQRXJK WR SURGXFH D ULFK ODQGVFDSH DOO E\ WKHPVHOYHV :KLOH WKHUH DUH DYDULHW\ RI GLIIHUHQW QRWH SDWWHUQV WKDW FDQ PDNH XS SHQWDWRQLF VFDOHV WKHUH LV RQH LQ SDUWLFXODU ZKLFK GHILQHV WKH PLQRU SHQWDWRQLF VFDOH DV ZHOO DV WKH PDMRU SHQWDWRQLF VFDOH WKDW LV PRVW RIWHQ XVHG 7KHVH VFDOHV DUH IRXQG LQ EOXHV DQG URFN PXVLF DQG YDULDWLRQV RI WKRVH VLPSOH VFDOHV DUH HQRXJK WR SURGXFH D ULFK ODQGVFDSH DOO E\ WKHPVHOYHV 7KHUH ¶V D UHDVRQ ZK\ WKH\ ¶UH FDOOHG ΔPLQRU ÷ DQG ΔPDMRU ÷ DQG LW ¶V EHFDXVH WKH\ RULJLQDWH IURP WKH QRWHV VFDOHV WKDW EHDU WKH VDPH QDPH

7KHUH DUH DOVR RWKHU SHQWDWRQLF VFDOHV HVSHFLDOO\ LQ QRQ ZHVWHUQ PXVLF ZKLFK DUH UDUHU EXW VWLOO VRPHWLPHV XVHIXO)RU H[DPSOH &KLQHVH VFDOH XVHG WR FRPSRVH WUDGLWLRQDO &KLQHVH IRON PXVLF LV D SHQWDWRQLF QRWH VFDOH

7KHQ WKHUH DUH QRWH VFDOHV QRWH VFDOHV KDYH PDQ\ IRUPV WKH PRVW EDVLF RI ZKLFK DUH FDOOHG ΔGLDWRQLF VFDOHV ÷ PRUH RQ WKLV ODWHU 7KH PRVW FRPPRQ 0DMRU VFDOH GR UH PH DQG 1DWXUDO PLQRU VFDOH DUH ERWK QRWH GLDWRQLF VFDOHV 7KH ZRUGV ΔPLQRU ÷ DQG ΔPDMRU ÷ UHIHU WR VRPHWKLQJ OLNH WKH PRRG RI WKH VFDOH ZLWK PLQRU VFDOHV LQ JHQHUDO VRXQGLQJ VDG GDUN DQG WKRXJKWIXO DQG PDMRU VFDOHV LQ JHQHUDO VRXQGLQJ KDSS\ EULJKW DQG OLYHO\ OLNH PLQRU DQG PDMRU FKRUGV

0RVW EOXHV IRU LQVWDQFH LV SODHG LQ D PLQRU NH\ ZKLFK PHDQV WKDW LW PDNHV XVH RI D PLQRU VFDOH TXLWH RIWHQ ZKHUHDV PRVW SRS LV SODHG LQ D PDMRU NH\ ZKLFK PHDQV LW PDNHV XVH RI D PDMRU VFDOH

7KHUH DUH WZR RWKHU YDULHWLHV RI QRWH VFDOHV WKDW DUH XVHG LQ FODVVLFDO PXVLF
QHR FODVVLFDO DGYDQFHG URFN DQG MD]] DQG WKH\ DUH WKH KDUPRQLF PLQRU VFDOH DQG WKH PHORGLF PLQRU VFDOH DQG WKHLU YDULDWLRQV

%HRQG QRWH DQG QRWH VFDOHV WKHUH DUH D IHZ VSHFLDOL]HG QRWH MD]] VFDOHV FDOOHG EHERS VFDOHV 2WKHUZLVH LW LV DOZD\V SRVVLEOH WR SURGXFH QHZ VFDOHV E\ DGGLQJ QRWHV IURP WKH FKURPDWLF VFDOH WR DQ H[LVWLQJ VFDOH UHVXOWLQJ LQ VFDOHV
ZLWK DV PDQ\ DV QRWHV WKLV LV PRVW RIWHQ GRQH LQ MD]]

,W LV DOVR SRVVLEOH WR FUHDWH QHZ VFDOHV E\ DOWHULQJ DQ H[LVWLQJ VFDOH
FKURPDWLFDOO\ ,QJHQHUDO FUHDWLQJ QHZ VFDOHV E\ WKLV FKURPDWLF DOWHUDWLRQ DQG RU
DGGLWLRQ UHVXOWV LQ ZKDW ZH FDOO ΔVXQWKHWLF ÷ VFDOHV RU PRGHV

.HHS LQ PLQG WKDW WKHUH DUH QRWHV LQ PXVLF VR WKHUH DUH KDUPRQLF FHQWHUV RU URRW QRWHV WKDW D VFDOH FDQ VWDUW RQ 7KLV JRHV IRU DQ\ NLQG RI VFDOH QR PDWWHU
WKH QXPEHU RI QRWHV LW FRQWDLQV

0LQRU 3HQWDWRQLF 6FDOH

:KLOH WKHUH DUH PDQ\ GLIIHUHQW NLQGV RI SHQWDWRQLF VFDOHV WKDW FDQ EH DVVHPEOHG WKHUH LV UHDOO\ RQO\ RQH SHQWDWRQLF VWUXFWXUH WKDW LV XVHG FRPPRQO\ LQ ZHVWHUQ
PXVLF 7KLV VWUXFWXUH KDV YDULDWLRQV LQ SDUWLFXODU WKDW DUH XELTXLWRXV LQ EOXHV
URFN SRS FRXQWU\ MD]] DQG EOXHJUDVV 7KRVH WZR VFDOHV DUH WKH PLQRU SHQWDWRQLF ZKLFK LV WKH PRVW IDPLOLDU DQG WKH PDMRU SHQWDWRQLF

7KH PLQRU SHQWDWRQLF VFDOH LV WKH IRXQGDWLRQ RI PRVW RI WKH EOXHV DQG URFN WKDW PRVW RI XV KDYH KHDUG ,W LV D VLPSOH HDV\ WR UHPHPEHU VFDOH ZLWK D YHU\ GLVWLQFW VRXQG ,W FRQWRWHV D VRXOIXO GHHS DIIHFW DQG FDQ EH PDGH WR VRXQG TXLWH VDG 7KLV VFDOH FRQVLVWV RI QRWHV WKDW DUH DOO IRXQG LQ WKH QDWXUDO PLQRU VFDOH DQG VR LW
LV RIXVH DQ\WLPH WKH PLQRU VFDOH LV FDOOHG IRU

,W LV SRVVLEOH WR PDNH DQ HQWLUH FDUHHU RXW RI WKLV RQH KDUPRQLF FRQFHFWLRQ DV
PDQ\ EOXHV IRON EOXHJUDVV IXQN DQG URFN PXVLFLDQV KDYH 2XWVLGH RI WKH :HVWHUQ ZRUOG WKLV DQG VLPLODU VFDOHV DUH FRPPRQ LQ WUDGLWLRQDO $VLDQ DQG $IULFDQ PXVLF WKH ODWWHU EHLQJ WKH KLVWRULFDO VRXUFH RI WKH PLQRU SHQWDWRQLF VFDOH
LQ WKH $PHULFDQ)RON WUDGLWLRQ

0LQRU 3HQWDWRQLF 6WUXFWXUH

5HPHPEHU ZKHQ , VDLG WKDW ZH XVH LQWHUYDOV WR GHILQH FKRUGV DQG VFDOHV" +HUH "V KRZ ZH GR WKDW

:H VD\ WKDW WKH PLQRU SHQWDWRQLF VFDOH FRQVLVWV RI QRWHV

$ 5RRW D PLQRU UG D 3HUIHFW WK 3HUIHFW WK DQG D PLQRU WK
RU ZKHQ DEEUHYLDWHG

5 P 3 3 P

7KHVH QXPEHUV UHIHU WR WKH QRWHV "I UHODWLYH SRVLWLRQ ZLWKLQ D GLDWRQLF VFDOH LQ WKLV
FDVH WKH QDWXUDO PLQRU VFDOH EXW WKH LQWHUYDOV WKHPVHOYHV H[LVW LQ PDQ\ VFDOHV
LQFOXGLQJ WKH PLQRU SHQWDWRQLF VFDOH

,I WKH VFDOH LV SODFHG LQ RUGHU WKHUH LV

$5RRW DEEUHYLDWHG WR 15 ₚP

$URRWLVIROORZHGE\DQRWHDVWHSDQGDKDOIKDOIVWHSVDERYHWKHURRWWKLVLV WKHPLQRU UG RUVLPSO\ PP Ч

7KHQDQRWHDIXOOZKROHVWHSDERYHWKDWWKLVLVWKH3HUIHFW RU Ч3 PP

$QRWHDIXOOVWHSDERYHWKDWWKLVLVWKH3HUIHFW RU Ч3 PP

$QGDQRWHDVWHSDQGDKDOIDERYHWKDWWKLVLVWKHPLQRU RU P

127(7KHVHDUHWKH QRWHVRIWKHPLQRUSHQWDWRQLFVFDOHV 7KHGLVWDQFHEHWZHHQWKHODVW QRWHWKHPLQRU DQGWKHILUVWQRWHLQWKHQH[WRFWDYHLVRQHIXOOVWHS

1RZFKHFNZKDWLVXQGHUOLQHGDERYH 7KHVHGLVWDQFHV LQWHUYDOV FDQEHXVHGWR GHVFULEHWKHVFDOHLQDQRWKHU VLPSOHU ZD\

: + : : : + :

RU VDPHWKLQJ

76 7 7 76 7

7KLV LV FDOOHG D VFDOH IRUPXOD ,Q WKLV FDVH LW ѕV WKH PLQRU SHQWDWRQLF VFDOH IRUPXOD $ VFDOH IRUPXOD VLPSO\ UHSUHVHQWV D XQLTXH VHW RI LQWHUYDOV IRXQG ZLWKLQ HDFK VFDOH ,W LV ZULWWHQ E\XVLQJWRQHV DQG VHPLWRQHV DQG DFRPELQDWLRQ RI WKH WZR 76 ††

-XVW E\ NQRZLQJ D VFDOH IRUPXOD \RX FDQ VWDUW RQ DQ\ RI WKH QRWHV RQ DQ\ LQVWUXPHQW DSSO\WKH IRUPXOD DQG HDVLO\ ILJXUH RXW KRZ WR SOD\ DQ\VFDOH

:KHQ SXW LQ FRQWH[W

5 †† 76 †† PLQRU UG 3 †† 7 ††HUIHFW WK 3 †† 7 ††HUIHFW WK ††

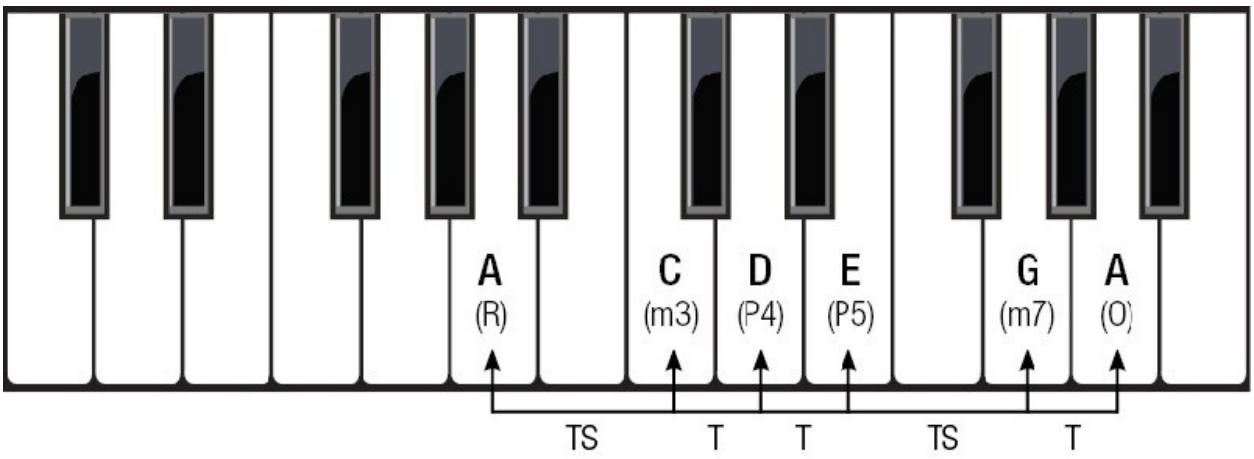
†† 76 †† PLQRU WK 5 †† 7 ††

)RU H[DPSOH LI ZH VWDUW IURP DQ $ QRWH ZH FDQ WKHQ DSSO\WKH IRUPXOD 76 7 †† 7 †† 76 †† 7 †† DQG HDVLO\ ILJXUH RXW WKH UHVW RI WKH QRWHV RI WKH $ PLQRU SHQWDWRQLF VFDOH 7KH QRWHVZRXOGEH

$ †† 7 †† * †† 76 ††) †† 7 †† ' †† 7 †† & †† 76 †† $

- $LVWKH5RRW
- &LVWKHPLQRU UG DERYH $
- 'LVWKH3HUIHFW WK DERYH $
- (LVWKH3HUIHFW WK DERYH $
- *LVWKHPLQRU WK DERYH $
- DQGODVWO\$LVWKH3HUIHFW WK 2 ††FWDYH 2

:KHQ DSSO\LQJ D VFDOH IRUPXOD \RX FDQ IROORZ WKH QRWH FLUFOH WR ILQG RXW WKH QRWHV HDVLHU



)LJXUH 0LQRU SHQWDWRQLF VWUXFWXUH RQ D SLDQR LQ $

7KLV FDQ EH GRQH RQ DQ\QRWH NH\

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,I\RX SODFH WKH URRW RI WKLV VFDOH RQ WKH URRW RI YLUWXDOO\ DQ\FKRUG HVSHFLDOO\ PLQRU DQG GRPLQDQW FKRUGV WKHQ WKH RWKHU QRWHV LQ WKH VFDOH ZLOO DOPRVW DOZD\V
VRXQG JRRG ,I\RX ¶UH SOD\LQJ WKH EOXHV WKHQ DOO\RX QHHG WR GR LV PDNH VXUH WKH URRW RI WKLV VFDOH LV WKH VDPH QRWH DV WKH NH\WKDW WKH VRQJ LV LQ

:KDW ,V D 0RGH"

,W LV ZRUWK XVLQJ WKH PLQRU SHQWDWRQLF VFDOH WR GHPRQVWUDWH DQ LPSRUWDQW FRQFHSW
:H VDZ WKDW WKLV VFDOH FRQVLVWV RI FROOHFWLRQ RI QRWHV DQG WKDW ZKHQ WKH\ DUH
RUJHQWHG DURXQG WKH URRW WKHUH LV D SDUWLFXODU VHW RI LQWHUYDOV WKDW GHILQH WKH VFDOH

%XW ZKDW LI ZH WDNH WKRVH VDPH H[DFW QRWHV ++ IRU LQVWDQFH WKH $ PLQRU SHQWDWRQLF VFDOH $ & ' (DQG * ++ DQG UH RUJHQW WKHP ,Q RWKHU ZRUGV

ZKDWLIUDWKHUWKDQFDOOLQJ$WKHURRW ZHWUHDWWKLVVDPHFRROHFWLRQRIQRWHV DVD
&VFDOH WUHDWLQJ&DVWKHURRW

1RZWKHQRWHVKDYHGLIIHUHQWQDPHV

- &LVQRORQJHUWKHPLQRU[UG] RI$ LWLVQRZWKH5RRW
- 'LVQRORQJHUWKH3HUIHFW[WK] RI$ LWLVQRZWKH0DMRU[QG] RI &
- (LVQRZWKH0DMRU[UG]
- *LVQRZWKH3HUIHFW[WK] DQG $LVQRZWKH0DMRU[WK]

6RWKHQHZVHWRIQRWHVLV

5RRW 0DMRU[QG] 0DMRU[UG] 3HUIHFW[WK] 0DMRU[WK] RU

5 0 0 3 0

7KLV LV D FRPSOHWHO\ GLIIHUHQW DEVWUDFW FROOHFWLRQ RI QRWHV WKDQ WKH $PLQRU SHQWDWRQLF VFDOH †† HYHQ WKRXJK LW FRQVLVWV RI WKH VDPH WRQHV †† EHFDXVH LW LV QRZ D FRPSOHWHO\ GLIIHUHQW VHW RI LQWHUYDOV

0DMRU 3HQWDWRQLF 6WUXFWXUH

%\XVLQJ WKH VDPH SDWWHUQ EXW EHJLQQLQJ DW D GLIIHUHQW QRWH ZH KDYH FUHDWHG D GLIIHUHQW VFDOH 7KH VFDOH WKDW ZH KDYH FUHDWHG LV FDOOHG WKH &PDMRU SHQWDWRQLF
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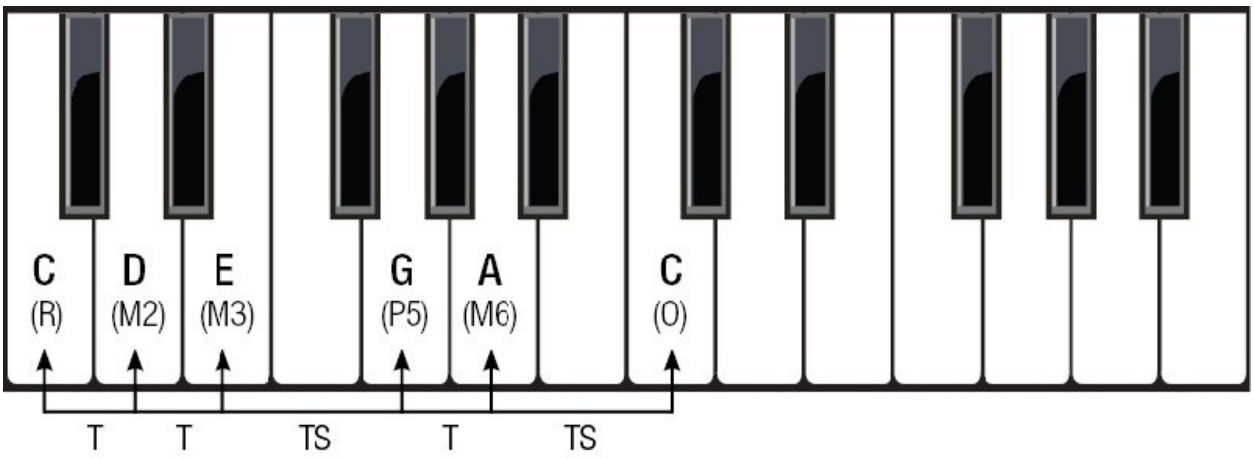

)LJXUH 0DMRU SHQWDWRQLF VWUXFWXUH RQ SLDQR LQ &

:KDW ZH KDYH FUHDWHG E\ UHRUGHULQJ WKH VFDOH LV FDOOHG D ΔPRGH ÿ :H FDQ VD\ WKDW WKH PDMRU SHQWDWRQLF VFDOH LV D PRGH RI WKH PLQRU SHQWDWRQLF VFDOH RU WKDW
WKH PLQRU SHQWDWRQLF VFDOH LV D PRGH RI WKH PDMRU SHQWDWRQLF VFDOH ZH XVXDOO\ VD\ WKH PDMRU SHQWDWRQLF LV GHULYHG IURP WKH PLQRU SHQWDWRQLF EHFDXVH LW LV WKH PRVW XVHG RQH LQ YLUWXDOO\ DOO EOXHV DQG URFN

6R PDMRU SHQWDWRQLF VFDOH LV GHULYHG IURP WKH PLQRU SHQWDWRQLF VWUXFWXUH RQO\ LW
EHJLQV RQ ZKDW ZDV WKH QG QRWH RI WKH PLQRU SHQWDWRQLF

/LNH WKH PLQRU SHQWDWRQLF VFDOH WKH PDMRU SHQWDWRQLF VFDOH LV VLPSOH DQG
UHFRJQL]DEOH DQG PRVW RI XV NQRZ LW ZLWKRXW UHDOL]LQJ LW %HFDXVH RI WKH
GLIIHUHQW VHW RI LQWHUYDOV WKLV VFDOH VRXQGV GLIIHUHQW †† LW KDV D EULJKWHU KDSSLHU
VRXQG WKDQ LWV PLQRU FRXVLQ ZKLFK LV D UHVXOW RI WKH IDFW LW EHLQJ D ΔPDMRU ÿ VFDOH
7KH QRWHV RI WKH PDMRU SHQWDWRQLF VFDOH DUH DOO FRQWDLQHG LQ WKH PDMRU VFDOH DQG
VR LW LV XVHIXO ZKHQHYHU WKDW VFDOH FDQ EH XVHG

%HFDXVH WKHUH DUH QRWHV LQ WKH PLQRU SHQWDWRQLF VFDOH WKHUH DUH GLIIHUHQW
QRWHV WKDW FDQ DFW DV WKH URRW RI GLIIHUHQW PRGHV)RU HDFK QRWH LQ WKH FROOHFWLRQ
WKHUH LV D GLIIHUHQW PRGH LQ ZKLFK WKDW QRWH LV WKH URRW DQG WKH RWKHU QRWHV DUH

GHILQHGZLWKUHVSHFWWRLWUHVXOWLQJLQ GLIIHUHQWVHWVRILQWHUYDOVZLWKHDFK QRWH

7KLV LV D YHU\ EDVLF XQGHUVWDQGLQJ RI PRGHV $V \RXU XQGHUVWDQGLQJ DQG
DSSOLFDWLRQ LQ SODLQJHHSHQV \RXZLOO VWDUWVHHLQJWKHP DVFRPSOHWHO\ VHSDUDWH
VFDOHVUDWKHUWKDQVLPSOHQRWHUHRULHQWDWLRQVRIWKHSDUHQWVFDOHV WKDW ¬ VZK\\RX
FDQVRPHWLPHVXVHWKHWHUPV ±PVFDOH ¬ DQG ±PPRGH ¬ LQWHUFKDQJHDEO\

2Q D GHHSHU OHYHO PRGHV VKRZ WKH UHODWLRQVKLSV EHWZHHQ FKRUGV DQG VFDOHV DQG WKH\ DUH FRPSOHWHO\ UHODWLYH WR WKH FKRUGV WKDW DUH SODLQJ XQGHUQHDWK LQ WKH EDFNJURXQG RU RQ WKH EDFNLQJ WUDFN 7KLV FRQFHSW ZLOO EH H[WUHPHO\ LPSRUWDQW ZKHQ LW FRPHV WR QRWH VFDOHV %XW ILUVW OHW¶V WDFNOH WKH PLQRU SHQWDWRQLF VFDOH PRGHV

0RGHV RI WKH 0LQRU 3HQWDWRQLF 6FDOH :LWK $XGLR ([DPSOHV

)URP ZKDW ZH¶YH OHDUQHG VR IDU ZH FDQ HDVLO\ OLVW DOO RI WKH PRGHV RI WKH PLQRU SHQWDWRQLF VFDOH 6LQFH LW FRQWDLQV QRWHV WKHUH ZLOO EH ILYH RI WKHP

,¶YH LQFOXGHG DXGLR H[DPSOHV IRU HDFK PRGH WR KHOS \RX KHDU KRZ WKDW
PRGH VFDOH VRXQGV (DFK DXGLR WUDFN FRQVLVWV RI WKH IROORZLQJ LQ RUGHU

- 6FDOH WRQHV SOD\HG XS DQG GRZQ VWDUWLQJ DQG HQGLQJ RQ WKH 5RRW QRWH ++ WKLV ZLOO KHOS WR HVWDEOLVK WKH VFDOH¶V WRQDO FHQWHU LQ RXU HDUV
- $ VHULHV RI FKRUGV WKDW EHORQJ WR WKDW VFDOH 6LQFH DW WKLV SRLQW LQ WKH ERRN \RX PD\ QRW EH IDPLOLDU ZLWK KRZ FKRUGV DUH EXLOW DQG JHQHUDWHG E\ VFDOHV MXVW IRFXV RQ WKH VRXQG RI WKH FKRUGV DQG QRWLFH KRZ HYHU\WKLQJ UHODWHV WR WKH ILUVW FKRUG WKDW LV SOD\HG $IWHU\RX JR WKURXJK WKH FKRUGV HFFWLRQ ODWHU LQ WKH ERRN \RX FDQ FRPH EDFN WR WKHVH VFDOH DXGLRV DJDLQ DQG LW ZLOO EH FOHDU ZK\ WKRVH FKRUGV DUH SOD\HG
- $Q LPSRYLVDWLRQ H[FHUSW RYHU D GURQH QRWH D QRWH XVXDOO\ D ORZ EDVV QRWH WKDW LV VXVWDLQHG RU LV FRQWDQWO\ VRXQGLQJ WKURXJKRXW WKH H[FHUSW LQ WKH EDFNJURXQG 7KH IROORZLQJ H[DPSOH ZLOO EH LQ $ VR ZH¶OO EH XVLQJ $ QRWH DV WKH GURQH QRWH RYHU ZKLFK ZH¶OO EH SOD\LQJ VFDOH WRQHV IRU HDFK PRGH VHSDUDWHO\ LQ D PXVLFDO ZD\ LPSURYLVH EDVLFDOO\

+HDULQJ GLVWLQJXLVKLQJ DQG XVLQJ PRGHV LV D SURFHVV WKDW ZLOO WDNH VRPH WLPH EXW RQFH \RX GR LW PRVW RI WKH WKLQJV LQ WKHRU\ ZLOO VWDUW WR PDNH PXFK PRUH VHQVH WKH GRWV ZLOO EH FRQQHFWHG DQG LW ZLOO PDNH\RX D PXFK EHWWHU PXVLFLDQ 6R EH SDWLHQW DQG WDNH\RXU WLPH ZLWK WKLV /HW¶V JHW WR WKH PRGHV

0LQRU 3HQWDWRQLF 0RGH 0 †LQRU 3HQWDWRQLF 6FDOH

7KH ILUVW PRGH RI WKH PLQRU SHQWDWRQLF VFDOH LV MXVW WKH PLQRU SHQWDWRQLF VFDOH ,W
FRQVLVWV RI D

5RRW PLQRU UG 3HUIHFW WK 3HUIHFW WK PLQRU WK

,Q $ WKH VFDOH LV $ & ' (* +HUH ¶V KRZ WKLV VFDOH RU PRGH VRXQGV

0LQRU 3HQWDWRQLF 6FDOH 0RGH DXGLR H[DPSOH LQ $! KWWS JRR JO L[E %4

3D\ FORVH DWWHQWLRQ KRZ HDFK RI WKH QRWHV SODHG VRXQG DJDLQVW WKH EDFNLQJ
GURQH QRWH 6RPH ZLOO DGG WHQVLRQ VRPH ZLOO IHHO PRUH SOHDVDQW DQG VRPH ZLOO
SURYLGH UHVROXWLRQ

0LQRU 3HQWDWRQLF 0RGH 0 †DMRU 3HQWDWRQLF 6FDOH

7KH VHFRQG PRGH RI WKH PLQRU SHQWDWRQLF VFDOH KDV D VSHFLDO QDPH ,W LV WKH
0DMRU SHQWDWRQLF VFDOH DV ZH ¶YH VHHQ LQ WKH SUHYLRXV VHFWLRQ

,W FRQVLVWV RI WKH IROORZLQJ LQWHUYDOV

5RRW 0DMRU QG 0DMRU UG 3HUIHFW WK 0DMRU WK

:LWK DEEUHYLDWLRQV 5 0 0 3 0

,Q & WKH QRWHV DUH & ' (* $

&LV WKH UHODWLYH PDMRU NH\ RI $ PLQRU SHQWDWRQLF ZKLFK LV FRQVLGHUHG LWV SDUHQW
VFDOH <RX GRQ ¶W QHHG WR XQGHUVWDQG WKLV IRU QRZ MXVW KDYH WKH LGHD LQ \
RXU
PLQG

+HUH LV WKH NH\WKLQJ †† LQ WKH LPSURYLVDWLRQ H[FHUSW IRU WKLV PRGH ZH ZLOO EH
SODLQJ RYHU WKH $ GURQH QRWH DJDLQ VR WKH WRQDO FHQWHU ZLOO EH $,Q RUGHU
WR
KHDU KRZ WKLV PRGH VRXQGV ZH ZLOO SOD\ 0DMRU SHQWDWRQLF VFDOH RU PRGH
PLQRU SHQWDWRQLF VFDOH LQ $ UDWKHU WKDQ & RYHU WKLV EDFNLQJ QRWH +RSH
\RX ¶UH VWLOO ZLWK PH

,QRUGHUWRGRWKDWZHQHHGWKHQRWHVRIWKH$0DMRUSHQWDWRQLFVFDOHVRZH MXVW
DSSO\WKH0DMRUSHQWDWRQLFIRUPXODVWDUWLQJIURPWKH$QRWH 7KLVIRUPXOD LV VKRZQRQ)LJXUH EXWKHUHLWLVDJDLQ

5 5 † 76 † 0 † 7 † 3 † 76 † 0 † 7 † 0 † 7 †

$QGWKHQRWHVRIWKH$0DMRUSHQWDWRQLFVFDOHDUH

$ 2 $ † 76 † († 7 †) † 76 † & † 7 † % † 7 †FWDYH

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QRWH 7KLV ZLOO JLYH XV WKH VRXQG RI WKH PRGH RI PLQRU SHQWDWRQLF VFDOH RU VLPSO\0DMRUSHQWDWRQLFVFDOH

0LQRU3HQWDWRQLF0RGH DXGLR H[DPSOH LQ$! KWWS JRR JO [([(E

$JDLQ SD\FORVH DWWHQWLRQ WR HDFK RI WKH QRWHV DQG KRZ LW VRXQGV DJDLQVW WKH
EDFNLQJ$GURQH QRWH 1RWLFH KRZ WKH0DMRU & LQ WKLV FDVH JLYHV LW WKDW PDMRUXSEHDWIHHO%HSDWLHQWZLWKWKLV

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7KHWKLUGPRGHLQRXU$PLQRUSHQWDWRQLFH[DPSOHEHJLQVRQ'DQGFRQVLVWVRI D

5RRW0DMRU QG 3HUIHFW WK 3HUIHFW WK PLQRU WK
2U VLPSO\ 5 0 3 3 P

/HW'VTXLFNO\UHFDSKRZZHJRWWRWKLV LW'VWKHVDPHSURFHVVDVZLWKWKH0DMRU SHQWDWRQLFPRGH

,Q0RGH RI WKH $ PLQRU SHQWDWRQLF WKH QRWHV ZHUH $ & ' (* 0RGH EHJLQV RQWKH UG QRWH ZKLFKLV'DQGFRQWLQXHVIURPWKHUH

6R WKH QRWHV QRZ LQ ' DUH ' (* $ &

'LVRORQJHU3HUIHFW WK RI$ LWLVQRZWKH5RRW

- (LVQRORQJHUWKH3HUIHFW^WK` RI$LWLVQRZWKH0DM^RU` UHODWLYHWR'
- *LVQRORQJHUWKHPLQRU^WK` RI$LWLVQRZWKH3HUIHFW^WK` UHODWLYHWR'
- $LVQRORQJHUWKH5RRW LWLVQRZWKH3HUIHFW^WK` UHODWLYHWR'
- &LVQRORQJHUWKHPLQRU^UG` RI$LWLVQRZWKHPLQRU^WK` UHODWLYHWR'

7U\WRGRWKLVIRUPRGHV DQG E\RXUVHOIZKHQ ZHJHW WR WKHP LW ZLOO EH D QLFH OLWWOH PHQWDO ZRUNRXW

1RZ DJDLQ ' PLQRU SHQWDWRQLF PRGH LV UHODWLYH PRGH WR WKH $ PLQRU
SHQWDWRQLF EHFDXVH WKH\ VKDUH WKH VDPH QRWHV DQG $ PLQRU SHQWDWRQLF LV LWV
SDUHQWV FDOH %XW VLQFH RXU EDFNLQJ GURQH QRWH LV VWLOO $ LQ WKH DXGLR H[DPSOH LQ RUGHU WR KHDU WKH FKDUDFWHULVWLF VRXQG RI WKLV PRGH ZH QHHG WR XVH PLQRU SHQWDWRQLF PRGH LQ $

6R ZH MXVW WDNH WKH PRGH "IV LQWHUYDO VWUXFWXUH ZLWK WKH VFDOH IRUPXOD DQG DSSO\
LW VWDUWLQJ IURP WKH $ QRWH DJDLQ 7KLV ZLOO JLYH XV WKH IROORZLQJ QRWHV

$ 5 † 76 † 3) † 7 † 3 ' † 76 † 0 % † 7 † * P 2 $ † 7 †

3OD\LQJ WKLV VHW RI QRWHV DQG LQWHUYDOV LQ $ RYHU WKH $EDFNLQJ GURQH QRWH ZLOO JLYH XV WKH VRXQG RI WKH PRGH RI WKH PLQRU SHQWDWRQLF VFDOH

0LQRU 3HQWDWRQLF 0RGH DXGLR H[DPSOH LQ $! KWWS JRR JO D4-F9

0LQRU 3HQWDWRQLF 0RGH

7KH IRXUWK PRGH EHJLQV RQ (DQG FRQVLVWV RI D

5RRW PLQRU ^UG` 3HUIHFW ^WK` PLQRU ^WK` PLQRU ^WK`

,WV QRWHV DUH (* $ & '

1RZ (LV WKH 5RRW DQG ZH KDYH D QHZ VHW RI LQWHUYDOV %XW DJDLQ VLQFH ZH ZLOO EH SODLQJ RYHU $ GURQH QRWH ZH "OO QHHG WR XVH PLQRU SHQWDWRQLF PRGH LQ $ WR JHW LWV VRXQG 6R ZH WDNH LWV LQWHUYDO VWUXFWXUH DORQJ ZLWK WKH VFDOH IRUPXOD 7 "IV
DQG 76 "IV DQG DSSO\ WKHP VWDUWLQJ IURP $ QRWH 7KLV ZLOO JLYH XV WKH IROORZLQJ QRWHV

$ 5 † 76 † & P † 76 † 3 ' † 7 †) P † 7 † * P 2 $ † 7 †

,W LV ZRUWK QRWLQJ DJDLQ WKH LQWHUYDOV LQ SDUHQWKHVLV H[SODLQ WKH QRWH "IV

UHODWLRQVKLS WR WKH 5RRW /LNH ZLWK DQ\ PRGH WKRVH LQWHUYDOV GHILQH D PRGH

DQG DUH UHVSRQVLEOH IRU LWV FKDUDFWHULVWLF VRXQG

0LQRU 3HQWDWRQLF 0RGH DXGLR H[DPSOH LQ $! KWWS JRR JO H %;QT

0LQRU 3HQWDWRQLF 0RGH

)LQDOO\ WKH ILIWK PRGH EHJLQV RQ WKH WK QRWH RI WKH PLQRU SHQWDWRQLF VFDOH ZKLFK LQ RXU $ PLQRU SHQWDWRQLF H[DPSOH LV * ,W KDV D

5RRW D 0DMRU QG D 3HUIHFW WK D 3HUIHFW WK DQG D 0DMRU WK

,WV QRWHV LQ * DUH * $ & ' (

7R JHW WKLV PRGH ¶V VRXQG RYHU WKH $ GURQH QRWH XVHG LQ WKH DXGLR H[DPSOH ZH ZLOO KDYH WR XVH PLQRU SHQWDWRQLF PRGH LQ $

:LWK RXW UHSHDWLQJ WKH ZKROH SURFHVV DJDLQ WKH QRWHV RI WKH WK PLQRU SHQWDWRQLF PRGH LQ $ DUH

$ 5 2 $ † 76 † 0 († 7 † 3) † 7 † 3 ' † 76 † 0 % † 7 †

0LQRU 3HQWDWRQLF 0RGH DXGLR H[DPSOH LQ $! KWWS JRR JO QJT::<

:H ¶YH VHHQ WKDW PRGH RI $ PLQRU SHQWDWRQLF LV LQ * ZLWK WKH QRWHV * $ & ' ($V LW KDV EHHQ VWDWHG VHYHUDO WLPHV WKH EDFNLQJ GURQH QRWH LQ RXU DXGLR LPSURYLVDWLRQ H[HUFLVHV LV $ VR WR JHW WKH PRGH ¶V VRXQG ZH KDG WR XVH PLQRU SHQWDWRQLF PRGH LQ $ LQVWHDG LW FDQ JHW FRQIXVLQJ VLQFH PRGHV RI WKH PLQRU SHQWDWRQLF GRQ ¶W KDYH VSHFLDO QDPHV OLNH WKH GLDWRQLF PRGHV 7KH SRLQW LV ZH FRXOG ¶YH XVHG WKH PRGH RI $ PLQRU SHQWDWRQLF ZKLFK VWDUWV RQ * IRU WKH LPSURYLVDWLRQ H[HUFLVHV EXW LQ WKDW FDVH ZH ZRXOG KDYH WR SOD\ RYHU WKH *GURQH QRWH WR KHDU WKH FKDUDFWHULVWLF VRXQG RI WKH $ PLQRU SHQWDWRQLF PRGH VRXQG 6LQFH ZH SOD\HG WKH WK PRGH RI WKH PLQRU SHQWDWRQLF LQ $ FDQ \RX ILJXUH RXW LWV SDUHQW PLQRU SHQWDWRQLF VFDOH",W ¶V%PLQRU SHQWDWRQLF

'RQ ¶W ZRUU\ LI \RX GRQ ¶W JHW WKLV QRZ LW ZLOO EH FOHDUHU ZKHQ ZH JHW WR GLDWRQLF PRGHV MXVW UHPHPEHU PRGHV DUH FRPSOHWHO\ UHODWLYH WR ZKDW ¶V SOD\LQJ LQ WKH EDFNJURXQG † SOD\LQJ WKH VDPH WKLQJ RYHU D GLIIHUHQW EDFNLQJ ZLOO KDYH GLIIHUHQW HIIHFWV

2Q DQRWKHU QRWH WKH VRXQG RI D PRGH EHFRPHV D ELW PRUH DSSDUHQW ZKHQ LW ¶V SOD\HG RYHU D IXOO FKRUG RU D FKRUG SURJUHVVLRQ LQ WKH EDFNLQJ WUDFN 7KRXJK LW ¶V

LPSRUWDQW DQG HDVLHU WR OHDUQ PRGHV WR MXVW VWDUW ZLWK D GURQH QRWH DQG NHHS LW
VLPSOH DW WKH EHJLQQLQJ :H KDYH \HW WR JR RYHU WKH FKRUGV ODWHU LQ WKH ERRN

0LQRU 3HQWDWRQLF 0RGH &RPSDULVRQ &KDUWV

7R VXP XS KHUH ¶V D WDEOH VKRZLQJ PLQRU SHQWDWRQLF PRGHV LQ $ ZLWK WKHLU LQWHUYDO IXQFWLRQV

MODES	NOTES	1 R	2 m2	3 M2	4 m3	5 M3	6 P4	7 Aug 4th	8 P5	9 m6	10 M6	11 m7	12 M7	Octave
	1st mode (minor pentatonic scale)	A			C		D		E			G		A
	2nd mode (Major pentatopnic scale)	C		D		E			G		A			C
	3rc mode	D		E			G		A			C		D
	4th mode	E			G		A			C		D		E
	5th mode	G		A			C		D		E			G

7DEOH 0LQRU SHQWDWRQLF PRGHV LQ $

,I \RX ZDQW D JRRG ZRUNRXW \RX FDQ WU\ WR ILOO RXW WKLV WDEOH LQ D GLIIHUHQW NH\ IRU H[DPSOH & \RX ZRXOG VWDUW ZLWK & DV WKH 5RRW QRWH LQ WKH WRS OHIW FRUQHU

Minor Pentatonic Mode 1	R	m3	P4	P5	m7	Intervals
	1	**b3**	**4**	**5**	**b7**	Notes
Minor Pentatonic Mode 2 — Major Pentatonic Scale	R	M2	M3	P5	M6	Intervals
	1	**2**	**3**	**5**	**6**	Notes
Minor Pentatonic Mode 3	R	M2	P4	P5	m7	Intervals
	1	**2**	**4**	**5**	**b7**	Notes
Minor Pentatonic Mode 4	R	m3	P4	m6	m7	Intervals
	1	**b3**	**4**	**b6**	**b7**	Notes
Minor Pentatonic Mode 5	R	M2	P4	P5	M6	Intervals
	1	**2**	**4**	**5**	**6**	Notes

7DEOH 0LQRU 3HQWDWRQLF ,QWHUYDO &RPSDULVRQ

1RWLFH RQ 7DEOH KRZ QRWHV DQG WKHLU IXQFWLRQV FKDQJH ZLWK GLIIHUHQW PRGHV 1RWLFH IRU H[DPSOH KRZ PRGHV DQG DUH VLPLODU 0 ††RGH KDV D 0DMRU DQG 0RGH KDV 3HUIHFW WK /RRN IRU SDWWHUQV DQG QRWLFH WKH GLIIHUHQFHV

:H ZLOO QRZ PRYH RQ WR QRWH VFDOHV EXW ILUVW

7HUP Δ'LDWRQLF ♮ :KDW 'RHV ,W 0HDQ"

$ VFDOH LV GLDWRQLF ZKHQ LW LV D PRGH RU YDULDWLRQ RI WKH PDMRU VFDOH 7KLV LQFOXGHV WKH QDWXUDO PLQRU VFDOH DQG DOO RI WKH GLDWRQLF PRGHV RI ZKLFK WKH
PDMRU DQG PLQRU VFDOHV DUH WZR

7KH ZRUG ΔGLDWRQLF ♮ LV*UHHN DQG LW PHDQV ΔDFURVV WKH RFWDYH 7 ♮KH QDPH UHIHUV
WR WKH IDFW WKDW WKH VWUXFWXUH RI GLDWRQLF VFDOHV LV VXFK WKDW WKHUH LV DQ HYHQ
GLVWULEXWLRQ RI QRWHV DFURVV WKH QRWH RFWDYH 7KHUH LV QHYHU LQ DQ\
GLDWRQLF VFDOH PRUH WKDQ D IXOO ZKROH VWHS EHWZHHQ WZR QRWHV DQG WKH KDOI VWHSV DUH VSUHDG RXW E\ DW OHDVW WZR IXOO VWHSV

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WKH PDMRU VFDOH DQG WKH PLQRU VFDOH ††WKHUH LV RQO\ RQH GLDWRQLF VWUXFWXUH

7KLV LV EHFDXVH DOO RI WKRVH VFDOHV DUH GHILQHG LQ WHUPV RI RQH DQRWKHU ,Q IDFW WKH\ DUH JHQHUDWHG IURP RQH DQRWKHU WKURXJK LQ PRVW FDVHV WKH\ DUH VDLG WR EH JHQHUDWHG IURP WKH PDMRU VFDOH EHFDXVH LW LV WKH PRVW IXQGDPHQWDO VFDOH

7KH\ VKDUH D VWUXFWXUH EHFDXVH WKH\ DUH HIIHFWLYHO\ WKH VDPH QRWH SDWWHUQ EHJLQQLQJ DW GLIIHUHQW QRWHV SRLQWV LI\RX WUHDW WKH ILUVW QRWH RI WKH PDMRU VFDOH DV WKH ILUVW QRWH RI WKH GLDWRQLF VWUXFWXUH WKHQ\RX FDQ GHILQH D FRPSOHWHO\ GLIIHUHQW VFDOH PRYLQJ XS WKDW VWUXFWXUH EXW EHJLQQLQJ RQ WKH VHFRQG QRWH RU WKH ILUVW QRWH RU DQ\RWKHU QRWH ++ MXVW OLNH WKH PLQRU SHQWDWRQLF PRGHV

6LQFH WKHUH LV RQO\ LQ IDFW RQH GLDWRQLF VWUXFWXUH LW LV SRVVLEOH WR WDON ERWK DERXW
GLDWRQLF VFDOHV PHDQLQJ WKH PRGHV RI WKH PDMRU VFDOH DQG DOVR DERXW 7+(
GLDWRQLF VFDOH DV LQ WKH XQGHUO\LQJ VWUXFWXUH RI WKRVH PRGHV

7KLV LV DQ H[FOXVLYH XVDJH DQG XQGHUVWDQGLQJ RI WKH WHUP ΔGLDWRQLF VFDOH ϧ ZKLFK LV QRW HQWLUHO\ FRQVLVWHQW EXW LV E\ IDU WKH PRVW FRPPRQ DQG UHFRPPHQGHG 6RPH WKHRULVWV DOVR LQFOXGH KDUPRQLF DQG PHORGLF PLQRU PRGHV DV GLDWRQLF IRU VSHFLILF UHDVRQV EXW WKLV LV PXFK UDUHU DQG FDQ FDXVH VRPH FRQIXVLRQ

1RWH 'LDWRQLF 6FDOHV ++ 1DWXUDO 0DMRU DQG 1DWXUDO 0LQRU 6FDOH

$V ZH NQRZ QRZ WKH PRVW EDVLF IXQGDPHQWDO W\SH RI QRWH VFDOH LV FDOOHG D ΔGLDWRQLF VFDOH ϧ DQG WKLV FDWHJRU\ LQFOXGHV ZKDW DUH SUREDEO\ WKH WZR PRVW
HDVLO\ UHFRJQL]DEOH VFDOHV E\ QDPH WKH QDWXUDO PDMRU VFDOH XVXDOO\ VLPSO\ ΔWKH PDMRU VFDOH ϧ DQG WKH QDWXUDO PLQRU VFDOH XVXDOO\ VLPSO\ ΔWKH PLQRU VFDOH ϧ

7KHVH WZR VFDOHV IRUP WKH KDUPRQLF DQG PHORGLF EHGURFN WKDW :HVWHUQ PXVLF ODV RQ DQG KDV ODLG RQ IRU D YHU\ ORQJ WLPH DQG VLPLODU VFDOHV DUH IRXQG WKURXJKRXW WKH KLVWRU\ RI ZRUOG PXVLF LQ WUDGLWLRQDO ,QGLDQ PXVLF IRU LQVWDQFH

,W LV ZRUWK QRWLQJ QRZ WKDW MXVW OLNH ZLWK WKH PLQRU SHQWDWRQLF DQG PDMRU

SHQWDWRQLF QDWXUDO PDMRU DQG QDWXUDO PLQRU VFDOHV DUH VLPSO\ WKH PRGHV RI HDFK

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PDMRU
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FOHDU

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PDMRU
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DOO RI WKHVH UHDVRQV LW LV RIWHQ WKH ILUVW SLHFH RI UHDO PXVLF WKHRU\ WKDW
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LQWURGXFH WR EHJLQQLQJ PXVLFLDQV

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ID VRO OD WL GR ? VLQJLQJ QRWHV LQ WKLV ZD\ LV UHIHUUHG WR DV VROIHJH ,W LV
JHQHUDOO\ GHVFULEHG DV D KDSS\ XSOLIWLQJ VFDOH DQG LW LV HDV\ WR SURGXFH KLJKO\
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WKH PDMRU VFDOH

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RI WKH PDMRU DQG QDWXUDO PLQRU VFDOHV FDQ EH JHQHUDWHG E\ WKH PDMRU VFDOH DQG VLQFH DOO QRQ GLDWRQLF KDUPRQ\ FDQ EH VHHQ DV GLDWRQLF KDUPRQ\ WKDW KDV EHHQ DOWHUHG FKURPDWLFDOO\ LQ VRPH ZD\ WKHUH DUH YLUWXDOO\ QR VFDOHV WKDW DUHQ ¶W VRPHKRZ GHULYDEOH IURP WKH PDMRU VFDOH DQG LWV YDULDWLRQV

,Q PRVW W\SHV RI :HVWHUQ PXVLF IURP FODVVLFDO WR FHOWLF WR SRS PDMRU VFDOH IRUPV WKH IRXQGDWLRQ RI WKH KDUPRQ\ 0LQRU SHQWDWRQLF PLJKW EH UHJDUGHG DV ₹P WKH NLQJ ₹ LQ DOO EOXHV PXVLF EXW HYHQ WKDW VFDOH LV GHULYHG IURP WKH QDWXUDO
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$ 5RRW QRWH 5

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$ QRWH D ZKROH VWHS DERYH WKDW ₹ WKH 0DMRU 0

$ QRWH D KDOI VWHS DERYH WKDW ₹ WKH 3HUIHFW 3

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ZKROH ZKROH KDOI ZKROH ZKROH ZKROH KDOI

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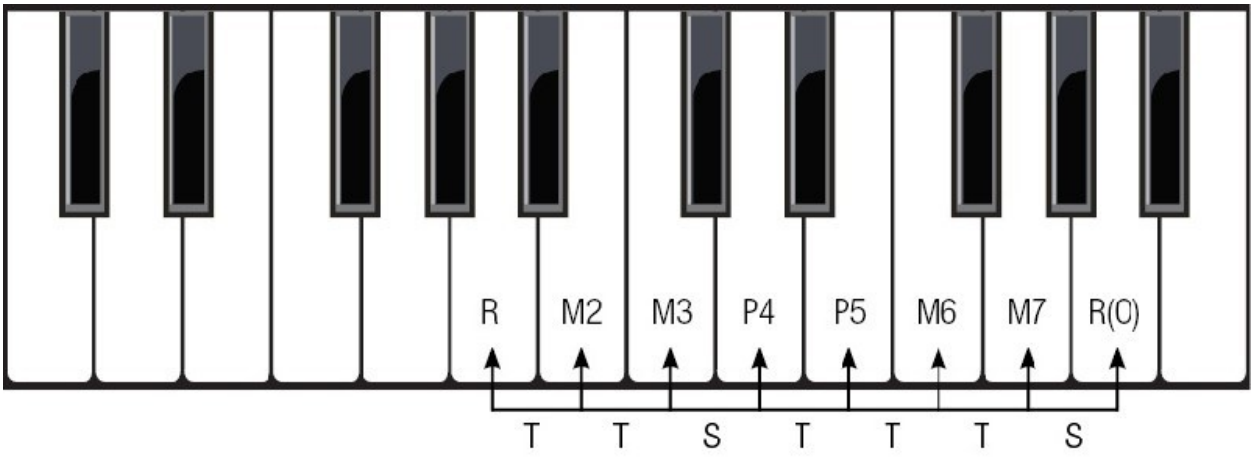

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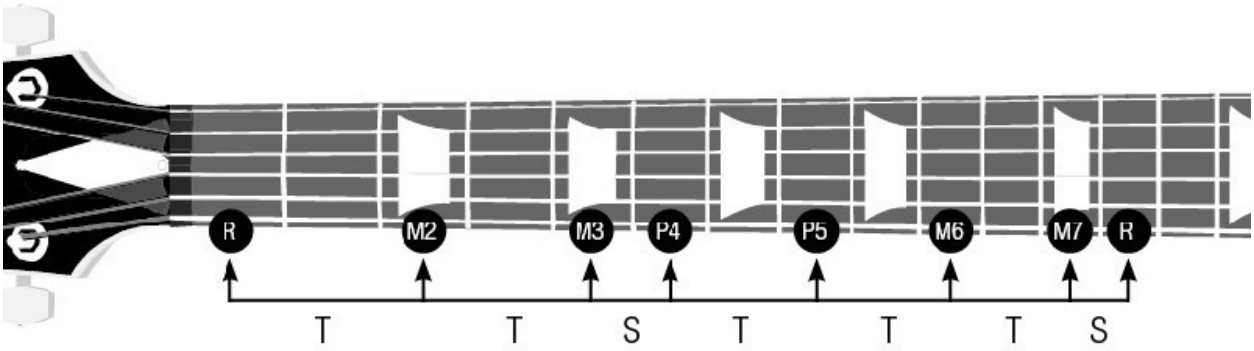

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2 5 ♯ 6 ♯ 0 ♯ 7 ♯ 0 ♯ 7 ♯FWDYH

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(DFK VFDOH KDV D VWDUWLQJ QRWH ♯ FDOOHG WKH 5RRW QRWH 5 ZKLFK JLYHV WKH VFDOH LWV QDPH 5RRW QRWH FDQ EH DQ\ RI WKH QRWHV IURP WKH QRWH FLUFOH

,I ZH VD\ Δ,Q WKH NH\ RI $ PDMRU ♮ RU \RX FDQ MXVW VD\ Δ LQ $ ♮ LI LW ¹V D PDMRU NH\ LW PHDQV ZH XVH $ QRWH DV WKH URRW QRWH DQG WKHQ DSSO\ IURP LW WKH PDMRU

VFDOH VWUXFWXUH 7767776

6R ΔLQ $ ♮ WKH QRWHV ZRXOG EH

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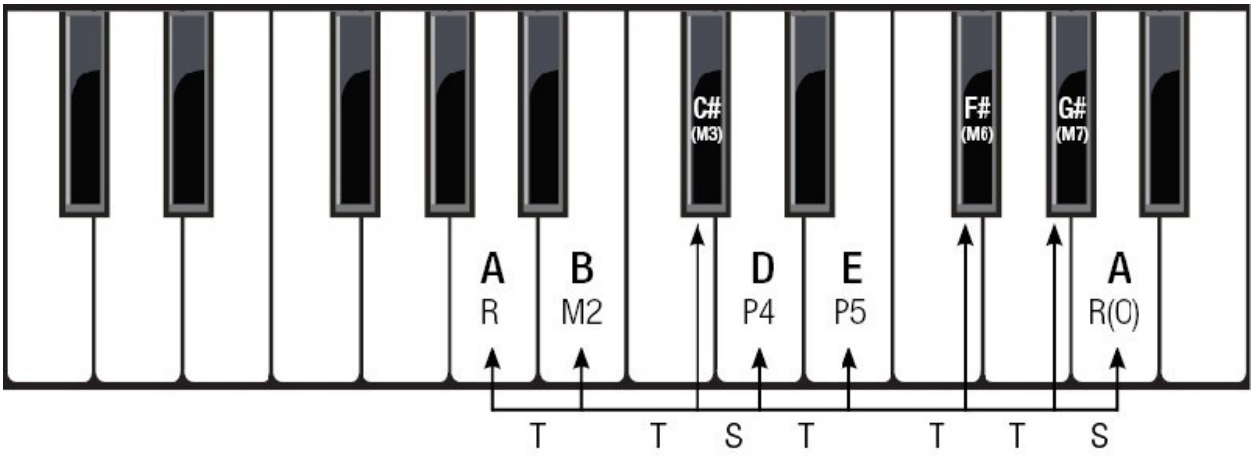

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,Q WKH NH\ RI & WKH QRWHV DUH

& ♯ 6 ♯ % ♯ 7 ♯ $ ♯ 7 ♯ * ♯ 7 ♯ (♯ 6 ♯) ♯ 7 ♯ ' ♯ 7 ♯ &

,I \RX VWDUW RQ WKH ' QRWH \RX ZRXOG JHW WKH ' PDMRU VFDOH LI \RX VWDUW RQ WKH * WKDW ZRXOG EH WKH * PDMRU VFDOH %E ZRXOG EH %E PDMRU VFDOH DQG VR RQ

2XW RI DOO NH\V & PDMRU NH\ LV VSHFLILF EHFDXVH LW FRQWDLQV DOO RI WKH QRWHV RI WKH FKURPDWLF VFDOH PLQXV WKH VKDUSV DQG IODWV & ' ( ) * $ % ♯ ZKLFK PHDQV WKDW RQ D SLDQR WKH & PDMRU VFDOH LV MXVW WKH ZKLWH NH\V (YHU\ RWKHU NH\ KDV RQH RU PRUH EODFN NH\V VKDUSV IODWV

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,Q WKH FDVH RI WKH PDMRU VFDOH WKLV LV SDUWLFXODUO\ LPSRUWDQW EHFDXVH LI \RX UHFDOO DOO RWKHU VFDOHV DUH GHULYDEOH IURP WKH PDMRU VFDOH DQG LI \RX NQRZ WKH 0DMRU

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WKH QRQ GLDWRQLF RQHV

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PDMRU VFDOH

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7KH PLQRU VFDOH LV D PRGH RI WKH PDMRU VFDOH WKDW 6R WKH PLQRU VFDOH
WKDW LV WKH PRGH RI WKH &PDMRU VFDOH

†† LV WKH $ PLQRU VFDOH FRQVLVWLQJ RI WKH QRWHV $ % & ' ( ) DQG *

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RU

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6R ZH KDYH

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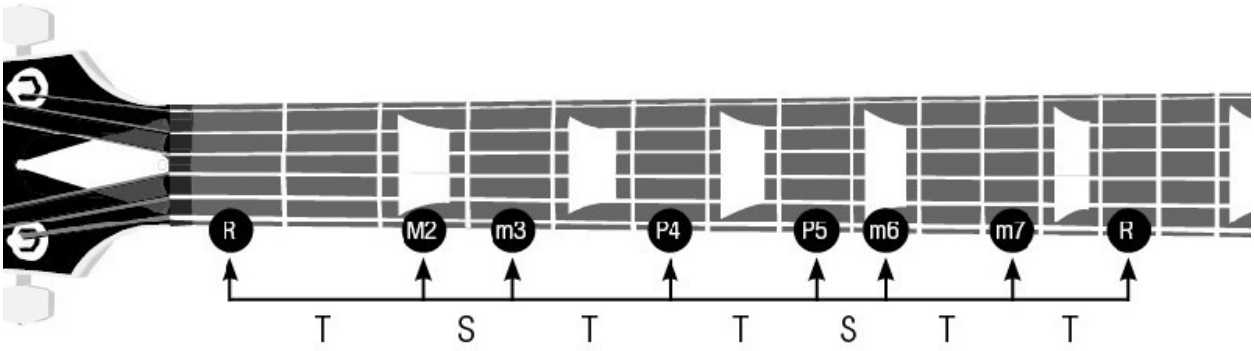

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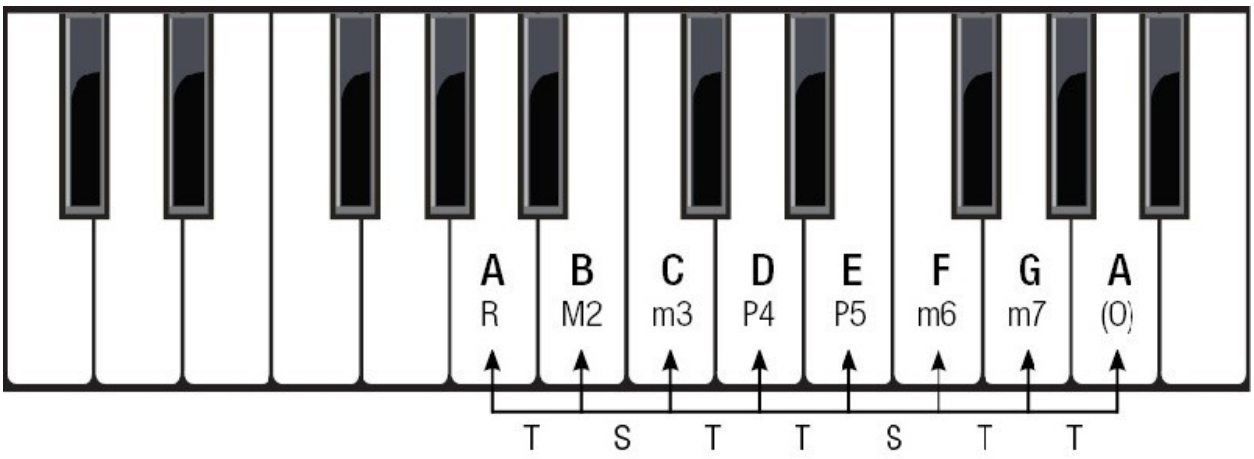
$ ♯ 7 ♯ * ♯ 7 ♯ (♯ 6 ♯) ♯ 7 ♯ ' ♯ 7 ♯ & ♯ 6 ♯ % ♯ 7 ♯ $



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PDMRU NH\V * ' $ (%)

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ZHOO

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SOD\ D PDMRU VFDOH DQG D PLQRU VFDOH WKDW DUH UHODWLYH WR HDFK RWKHU WKDW FRQWDLQ
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)LJXULQJ 2XW WKH 0DMRU 6FDOH LQ $OO .H\V 0DMRU 6FDOH ([HUFLVH

$ JUHDW H[HUFLVH IRU \RX QRZ DQG D FRRO OHDUQLQJ H[SHULHQFH LV WR ILJXUH RXW WKH PDMRU VFDOH WRQHV IRU HDFK RI WKH QRWHV NH\V

7DNH D ORRN DW WKH WDEOH RQ WKH QH[W SDJH FRS\ LW LQ HFHVVDU\ DQG ILOO LW RXW ZLWK
WKH DSSURSULDWH QRWHV <RX FDQ XVH WKH QRWH FLUFOH RQO\ LI \RX ·IUH VWXFN DQG DOVR
WR FKHFN DIWHUZDUGV LI \RX JRW LW ULJKW

KEY	T	T	S	T	T	T	S
1	2	3	4	5	6	7	1
C	D	E	F	G	A	B	C
G							
D							
A							
E							
B							
F							
Bb							
Eb	F	G	Ab	Bb	C	D	Eb
Ab							
Db							
Gb							
C#							
G#							
D#							
A#	B#	C##	D#	E#	F##	G##	A#
F#							

)LJXUH 0DMRU VFDOH LQ DOO NH\V

7KHUH DUH QRWHV LQ PXVLF VR WKHUH PXVW EH 0DMRU VFDOHV ††† HDFK VWDUWLQJ IURP D GLIIHUHQW QRWH ULJKW":HOO \HV EXW LQ PXVLF WKHRU\LW ꞌV QRW WKDW VLPSOH :H KDYH WR GHDO ZLWK ERWK ꞌV DQG E ꞌV

,Q RUGHU WR ILOO RXW WKH HQWLUH WDEOH FRUUHFWO\\RX KDYH WR IROORZ D VLPSOH UXOH LQ
PXVLF WKHRU\ ZKLFK VD\V WKDW WKHUH FDQ ꞌW EH WZR VLGH E\ VLGH QRWHV ZLWK WKH VDPH QDPH ,Q RWKHU ZRUGV \RX QHHG WR KDYH HDFK OHWWHU RI WKH DOSKDEHW LQ D VFDOH NH\RQO\RQFH DQG\RX MXVW DGG ꞌV RU E ꞌV DV QHFHVVDU\ $JRRG SUDFWLFH

ZKHQ ILJXULQJ RXW WKH QRWHV RI D VFDOH WKHQ LV WR ILUVW MXVW ZULWH RXW WKH DOSKDEHW
OHWWHUV IURP WKH VWDUWLQJ QRWH

/HW ¶V FKHFN RXW WKH NH\ RI $ DV DQ H[DPSOH † D SXUHO\ WKHRUHWLFDO NH\ DQG D KDUG RQH WR ILJXUH RXW 2QH WRQH DIWHU $ LV & RQH WRQH DIWHU & LV ' DQG RQH VHPLWRQH DIWHU ' LV ' HWF %XW ZH FDQ ¶W KDYH $ †' † & † ' EHFDXVH WKLV EUHDNV WKH UXOH %OHWWHU LV PLVVLQJ DQG WZR ' ¶V DUH VLGH E\ VLGH 7KDW ¶V ZK\ ZH XVH GRXEOH VKDUSV RU IODWV IRU IODW NH\V DQG ZH ZULWH WKLV NH\ LQ WKH IROORZLQJ ZD\

$ ‡ 6 ‡ * ‡ 7 ‡ (‡ 7 ‡) ‡ 7 ‡ ' ‡ 6 ‡ & ‡ 7 ‡ % ‡ 7 ‡ $

2Q WKH WDEOH WKH ILUVW NH\ DUH YHU\ FRPPRQ\ XVHG LQ PXVLF , ¶YH OHIW WKH WKHRUHWLFDO NH\ OLNH $ IRU \RX DV D FKDOOHQJH DQG SUDFWLFH 7U\ WR ILJXUH WKHP RXW DQG \RX ¶OO JDLQ D PXFK EHWWHU XQGHUVWDQGLQJ RI PDMRU VFDOH NH\V

1RWH WKDW IRU WKH NH\V WDUWLQJ RQ D QRWH ZLWK VKDUS \RX ZRXOG XVH ¶V DQG LI WKH NH\ VWDUWV RQ D QRWH ZLWK IODW E \RX QHHG WR XVH E ¶V , ¶YH SURYLGHG D FRPSOHWH OLVW RI DOO QRWHV LQ DOO NH\V DW WKH HQG RI WKLV ERRN VR WKDW \RX FDQ
GRXEOH FKHFN \RXU ZRUN

'HP\VWLI\LQJ 'LDWRQLF 0RGHV

,I WKHUH LV RQH WKLQJ WKDW VFDUHV PXVLFLDQV LQ SDUWLFXODU JXLWDULVWV LW LV WKH
GLDWRQLF PRGHV :LGHO\ NQRZQ EXW UDUHO\ XQGHUVWRRG ΔWKH PRGHV ÷ DUH QHDUO\ P\WKLF IRU PDQ\ SOD\HUV DW PDQ\ OHYHOV

0RVW RI XV NQRZ WKDW WKH PRGHV DUH LPSRUWDQW WKDW JUHDW SOD\HUV NQRZ DOO DERXW
WKHP EXW LW IHHOV OLNH WKH\ DUH PLOHV DZD\ †† SDUW RI ZKDW SHRSOH FDOO Δ PXVLF
WKHRU\ ÷ DQG QRW DW DOO WKH VRUW RI WKLQJ WKDW ZH FDQ XQGHUVWDQG PXFK OHVV PDNH
XVH RI

0D\EH ZH KDYH KHDUG RI PRGDO MD]] DQG EHOLHYH WKDW WKH PRGHV DUH RI LQWHUHVW WR DGYDQFHG MD]] SOD\HUV ZLWK \HDUV RI IRUPDO WUDLQLQJ EXW WKDW WKH\ DUH RWKHUZLVH XQQHFHVVDU\ RU EH\RQG RXU UHDFK

%XW WKH PRGHV DUH QRW PRQVWURXV 7KH\ DUH QRW D P\WK 7KH\ DUH QRW RQO\ IRU

SHRSOH ZKR VSHQG WKHLU VLQPXVLF VFKRRO 7KH\DUHQ¶W MXVW IRUMD]]PXVLFLDQV

DQG WKH\DUHQ¶W RQFH\RX KDYH OHDUQHG WKHP DQ\PRUH GLIILFXOW WR XVH WKDQ DQ\ RWKHU VFDOHV :KDW WKH\DUH KRZHYHU LV LPSRUWDQW

7KH PRGHV JLYH XV D ZD\ WR XQGHUVWDQG WKH LQWHUFRQQHFWHGQHVV RI GLIIHUHQW VFDOHV RIIHU XV D YDULHW\RI VFDOHV WR FKRRVH IURP LQ PDQ\VLWXDWLRQV DQG JLYH XV WKH WRROV WR FRPSRVH RU LPSURYLVH LQ DQ\QXPEHU RI ZD\V RYHU DQG LQ YLUWXDOO\ DQ\KDUPRQLF IUDPHZRUN

:H KDYH VHHQ WKDW D PRGH LV VLPSO\ D UHRULHQWDWLRQ RI D VFDOH WUHDWLQJ D GLIIHUHQW QRWH DV WKH URRW DQG UHGHILQLQJ WKH RWKHU QRWHV LQ WKH VFDOH 7KH QRWHV
VWD\ WKH VDPH EXW VLQFH WKH KDUPRQLF FHQWHU LV GLIIHUHQW WKH VHW RI LQWHUYDOV KDV
FKDQJHG ZKDW ZDV D SHUIHFW WK LQ WKH $ PLQRU VFDOH EHFRPHV D PDMRU UG LQ WKH & PDMRU VFDOH $QG WKDW LV WKH HVVHQFH RI PRGDOLW\ ++ WKH IDFW RI WKH UHODWLYH
KDUPRQLF YDOXHV RI QRWHV

$ QRWH LV QRW D VWDWLF XQFKDQJLQJ WKLQJ D QRWH GRHV GLIIHUHQW WKLQJV LQ GLIIHUHQW FRQWH[WV GHSHQGLQJ RQ WKH KDUPRQ\ WKDW LV SOD\LQJ XQGHUQHDWK RU LQ WKH
EDFNJURXQG ,W LV UHODWLYH 7KDW LV WKH IDFW WKDW FRQIXVHV PDQ\ SOD\HUV DQG LW LV WKH UHDVRQ WKDW WKH PRGHV DUH RIWHQ DYRLGHG

%HIRUH JRLQJ DQ\IXUWKHU LW LV LPSRUWDQW WR XQGHUVWDQG D IHZ WHUPV

3DUDOOHO DQG 5HODWLYH 0RGHV
3DUHQW 6FDOHV DQG 7RQDO &HQWHU

:KHQ ZH WDON DERXW PRGHV DQG VFDOHV ZH WDON DERXW WZR ZD\V IRU VFDOHV WR UHODWH WR RQH DQRWKHU FRQVRQDQWO\ 2QH LV EHLQJ LQ SDUDOOHO DQG WKH RWKHU LV EHLQJ
UHODWLYH

5HODWLYH 0RGHV

5HODWLYH PRGHV DUH ZKDW PRVW RI XV WKLQN DERXW ZKHQ ZH WKLQN DERXW ΔWKH PRGHV ◦ DQG LW LV WKH ZD\ WKH PRGHV KDYH EHHQ SUHVHQWHG WKXV IDU 5HODWLYH PRGHV DUH VFDOHV WKDW FRQWDLQ DOO RI WKH VDPH QRWHV EXW EHJLQ DW GLIIHUHQW SODFHV & PDMRU DQG $ PLQRU DUH UHODWLYH VFDOHV VDPH DV *PDMRU DQG (PLQRU

&RPLQJ EDFN WR WKH PLQRU SHQWDWRQLF PRGHV LW ZDV VDLG WKDW DOO RI WKH PRGHV RI WKH PLQRU SHQWDWRQLF DUH UHODWLYH WR RQH DQRWKHU EHFDXVH WKH\ VKDUH WKH VDPH

QRWHV DVZH ¹YH VHHQ IRU H[DPSOH $ PLQRU SHQWDWRQLF DQG &PDMRU SHQWDWRQLF

DUH UHODWLYH VFDOHV VDPH DV WKH PRGH RI $PLQRU SHQWDWRQLF LQ 'DQG $PLQRU SHQWDWRQLF DQG VR RQ

5HODWLYH PRGHV DUH XVHIXO ZKHQ H[WHQGLQJ WKH UDQJH RI D SLHFH XS RU GRZQ WKH KDUPRQLF VSDFH RQ D JXLWDU IUHWERDUG IRU LQVWDQFH 7KH\ DUH DOVR XVHIXO ZKHQ ILJXULQJ RXW ZKLFK FKRUGV ZLOO VXEVWLWXWH EHVW IRU RWKHU FKRUGV EXW ZH ¶OO JHW WR WKDW ODWHU LQ WKH ERRN

3DUHQW VFDOHV

7KLV LV WKH VFDOH WKDW RWKHU PRGHV DUH GHULYHG IURP $V ZH ¶YH VHHQ IRU DOO PRGHV RI WKH PLQRU SHQWDWRQLF WKH ILUVW PRGH ††† WKH PLQRU SHQWDWRQLF LV FRQVLGHUHG WKH 3DUHQW PLQRU VFDOH VLQFH RWKHU PRGHV DUH GHULYHG IURP LW

,W LV LPSRUWDQW WR EH DEOH WR WHOO TXLFNO\ ZKDW LV WKH SDUHQW VFDOH RI HDFK PRGH
WKDW \RX HQFRXQWHU)RU H[DPSOH FDQ \RX ILJXUH RXW ZKDW LV WKH SDUHQW VFDOH RI PLQRU SHQWDWRQLF PRGH LQ &"

<RX ZRXOG QHHG WR OLVW RXW WKH QRWHV ILUVW E\ DSSO\LQJ WKH PLQRU SHQWDWRQLF PRGH
IRUPXOD VWDUWLQJ IURP &

& 5 †7 6 †(P †7 †) †7 6 † 3 $ P †7 †% P

:H NQRZ WKDW UHODWLYH PRGHV DUH MXVW UHRUGHULQJV RI WKH SDUHQW VFDOH VR DIWHU
ZKLFK QRWH & FRPHV DV WKH WK "

,W ¶V)) $ % & (6R WKH SDUHQW PLQRU VFDOH RI WKH PLQRU SHQWDWRQLF PRGH LQ & LV) PLQRU SHQWDWRQLF

7KHUH DUH TXLFNHU PHWKRGV WR ILJXUH RXW WKH SDUHQW VFDOHV ZKLFK XVXDOO\ LQYROYH XVLQJ \RXU LQVWUXPHQW DOWKRXJK WKLV VRPHWKLQJ WKDW ZLOO FRPH QDWXUDOO\ ZLWK WLPH DV \RX FRQWLQXH WR XVH PRGHV LQ \RXU SODLQJ 2Q JXLWDU IUHWERDUG IRU LQVWDQFH WKHUH DUH SK\VLFDO VKDSHV \RX FDQ GHULYH IURP WKH QRWHV DQG WKHLU SRVLWLRQV UHODWLYH WR RQH DQRWKHU DQG \RX FDQ YLVXDOL]H WKLV VKDSH DQ\WLPH \RX ZDQW WR UHFDOO WKH 3DUHQW VFDOH DQG RWKHU UHODWLYH PRGHV RI D PRGH TXLFNO\

7RQDO FHQWHU

7RQDO FHQWHU LV OLNH WKH FHQWHU RI JUDYLW\ † LW LV XVXDOO\ WKH FKRUG RU D QRWH DV LQ
RXU FDVH ZLWK DXGLR H[DPSOHV WKDW WKH PRGH LV SODI\HG RYHU :KHQ ZH XVH D PRGH WKHUH DUH VRPH QRWHV WKDW ZLOO KHOS GHILQH WKH WRQDO FHQWHU LQ RXU VROR
7KHVH DUH WKH JRRG QRWHV RU \RX FRXOG DOVR FDOO WKHP WKH KRPH QRWHV 7KHVH

QRWHV DUH XVXDOO\ WKH QRWHV RI WKH FKRUG WKDW LV SODLQJLQ WKH EDFNJURXQG DW WKH

PRPHQW DQG WKH VWURQJHVW RI WKHP LV WKH 5RRW QRWH LW LV XVXDOO\ WKH VDIHVW RQH WR
ODQG RQ GXULQJ SOD\LQJ

7KHQ WKHUH DUH VRPH QRWHV WKDW SXOO DZD\ IURP WKH WRQDO FHQWHU HVWDEOLVKLQJ D
PRYHPHQW DQG WKHUH DUH VRPH WKDW ZLOO DGG ORWV RI WHQVLRQ ZKLFK WHQGV WR EH
UHVROYHG WR D KRPH QRWH 7KHUH DUH DOVR EDG QRWHV ZKLFK FDQ UHDOO\ FODVK ZLWK
WKH WRQDO FHQWHU RU RWKHU QRWHV SOD\LQJ LQ WKH EDFNJURXQG DQG WKH\ XVXDOO\ZRQ
¶W
VRXQG JRRG DW DOO

3DUDOOHO 0RGHV

$ SDUDOOHO PRGH RU VFDOH LV VLPSO\ D VFDOH WKDW VKDUHV LWV URRW ZLWK WKH
RULJLQDO
VFDOH LQ TXHVWLRQ ,Q RWKHU ZRUGV WKH PRGHV WKDW VKDUH WKH VDPH WRQDO FHQWHU
DUH SDUDOOHO PRGHV)RU LQVWDQFH $ PDMRU DQG $ PLQRU DUH SDUDOOHO PRGHV %
PLQRU SHQWDWRQLF DQG % PDMRU SHQWDWRQLF DUH SDUDOOHO PRGHV VDPH DV (/RFULDQ
DQG (/\GLDQ GRQ ¶W ZRUU\ DERXW WKH IDQF\ QDPHV IRU QRZ RU DQ\ RWKHU
PRGH VFDOH ZLWK WKH VDPH VWDUWLQJ QRWH ,Q DXGLO H[DPSOHV IRU WKH
PLQRU
SHQWDWRQLF PRGHV ZH SOD\HG SDUDOOHO PRGHV DJDLQVW WKH $ GURQH QRWH

5HODWLYH PRGHV VKDUH WKH VDPH SDUHQW VFDOH ++ WKH\ KDYH WKH VDPH QRWHV
RUGHUHG
GLIIHUHQWO\ EXW WKH\ KDYH GLIIHUHQW 5RRWV ZKLFK PHDQV WKH\ KDYH GLIIHUHQW WRQDO
FHQWHUV 3DUDOOHO PRGHV RQ WKH RWKHU KDQG VKDUH WKH VDPH URRW ++ WKH VDPH
WRQDO
FHQWHU EXW WKH\ KDYH GLIIHUHQW 3DUHQW VFDOH 7KLV GLVWLQFWLRQ LV LPSRUWDQW
WR
XQGHUVWDQG DQG UHPHPEHU

3DUDOOHO PRGHV DUH TXLWH XVHIXO LQ PRGDO KDUPRQ\ ZKHQ LW LV QRW XQFRPPRQ WR
DOWHU WKH KDUPRQ\ RI D SLHFH E\ VXEVWLWXWLQJ RQH SDUDOOHO PRGH IRU DQRWKHU 7KLV
LV FDOOHG PRGDO LQWHUFKDQJH 0RUH RQ WKLV PXFK ODWHU LQ WKH ERRN

'LDWRQLF 0RGHV 6SHOOHG 2XW ZLWK $XGLR ([DPSOHV

:H "YH VHHQ WKDW WKH PDMRU VFDOH LV D PRGH RI WKH PLQRU VFDOH DQG WKDW WKH PLQRU VFDOH LV D PRGH RI WKH PDMRU VFDOH ,Q JHQHUDO WKH PDMRU VFDOH LV WDNHQ WR EH SULPDU\ ZKHQ WDONLQJ DERXW WKH GLDWRQLF PRGHV DQG ZKHQ ZH WDON DERXW Δ WKH

PRGHV ♭ ZH DUH DOPRVW DOZD\V WDONLQJ DERXW WKHVH VFDOHV ♯ GLDWRQLF VFDOHV WKH
PDMRU VFDOH DQG LWV PRGHV ZKLFK LQFOXGH WKH QDWXUDO PLQRU VFDOH

7KHUH DUH QRWHV LQ WKH GLDWRQLF VFDOH DQG VR WKHUH DUH GLDWRQLF PRGHV 8QOLNH
WKH SHQWDWRQLF VFDOH PRGHV GLDWRQLF PRGHV HDFK KDYH WKHLU RZQ *UHHN QDPH
DQG WKRVH QDPHV DUH XVXDOO\ KRZ ZH UHIHU WR WKH PRGHV ZKHQ ZH DUH WKLQNLQJ
PRGDOO\

$JDLQ ZH ZLOO KDYH DXGLR H[DPSOHV IRU HDFK PRGH LQ WKH VDPH IRUPDW

$ VFDOH PRGH SOD\HG XS DQG GRZQ
&KRUGV IURP WKDW VFDOH SOD\HG LQ RUGHU LQ WULDG IRUP
$Q LPSURYLVDWLRQ H[FHUSW WKLV WLPH RYHU WKH &GURQH QRWH

7KH NH\ ZH ¶OO EH XVLQJ LV &0DMRU DQG DOO RI WKH LPSURYLVDWLRQ H[FHUSWV ZLOO EH
SOD\HG RYHU &GURQH QRWH

,RQLDQ 0RGH

7KH ILUVW PRGH LV WKH QRUPDO 0DMRU VFDOH 7KLV LV FDOOHG WKH ,RQLDQ PRGH ,Q &
LWV QRWHV DUH & ' ( ) * $ %

,W FRQVLVWV RI D

5RRW 0DMRU QG 0DMRU UG 3HUIHFW WK 3HUIHFW WK 0DMRU WK 0DMRU WK

7KLV PRGH KDV D KDSS\ PHORGLF FRQVRQDQW VRXQG :H KDYH DOUHDG\ H[DPLQHG
WKLV VFDOH PRGH LQ WKH SUHYLRXV VHFWLRQV ,Q WKH LPSURYLVDWLRQ H[FHUSW ZH ZLOO
SOD\ WKLV PRGH RYHU &GURQH QRWH VR ZH ZLOO ~~XVH &,RQLDQ PRGH~~ \RX FRXOG MXVW
VD\ UHJXODU &PDMRU VFDOH

,RQLDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JO V]1S)-

'RULDQ 0RGH

7KH QG PRGH RI WKH 0DMRU VFDOH LV WKH 'RULDQ PRGH ,W VWDUWV RQ WKH QG QRWH RI
WKH 0DMRU VFDOH 7KH 'RULDQ PRGH LV D PLQRU PRGH WKRXJK LW LV QRW ΔWKH PLQRU
VFDOH ♭ VLQFH LWV UG LV PLQRU DQG QRW PDMRU WKLV LV KRZ VFDOHV DUH GLYLGHG
EHWZHHQ PDMRU DQG PLQRU LQJHQHUDO

,Q ' LWV QRWHV DUH ' ( ) * $ % &

,WKDVD

5RRW 0DMRU QG PLQRU UG 3HUIHFW WK 3HUIHFW WK 0DMRU WK PLQRU WK
+RZGLGZHJHWWKLVLQWHUYDOV"(DV\ MXVWIRUWKLVPRGHOHW "VGRDTXLFNUHFDS

''RULDQLVUHODWLYHWR&0DMRUVFDOHEHFDXVH DVZHFDQVHH WKH\VKDUHWKHVDPH QRWHVEXWKDYHGLIIHUHQWVWRQDOFHQWHUV 6LQFHZHNQRZWKHQRWHVLQ&0DMRU ZH NQRZ WKHP LQ ' 'RULDQ DV ZHOO DQG LW "VHDV\WR ILJXUH RXW WKH LQWHUYDOV IURP WKHUH

- 'LVWKH5RRW
- (LVWKH0DMRU QG XS IURP '
-)LVWKHPLQRU UG XS IURP '
- *LVWKH3HUIHFW WK XS IURP '
- $LVWKH3HUIHFW WK XS IURP '
- %LVWKH0DMRU WK XS IURP '
- &LVWKHPLQRU WK XS IURP '

$QRWKHUZD\WRJHWWRWKLVLQWHUYDOVWUXFWXUHZLWKRXWWKHWRQDOFHQWHU LV WRWDNH
WKHPDMRUVFDOHIRUPXOD

7 7 6 7 7 7 6

†† DQGUHRULHQWLWOLNHZHGLGZLWKWKHQRWHV 6LQFHWKLVPRGHVWDUWV RQ WKH QRWHRIWKH0DMRUVFDOHZHVWDUWRQ "7 ¤P EROGHG

6RWKHVFDOHIRUPXODIRU'RULDQPRGHLV

7 6 7 7 7 6 7

1RZZHMXVWVWDUWIURPWKH5RRW ZKLFKFRXOGEHDQ\QRWH DQGFRQWLQXHIURP WKHUH

5 † 6 † 0 † 7 † P † 6 † 0 † 7 † 3 † 7 † 3 † 7 † P 2 5 † 7 †

7KH'RULDQPRGHLVGDUNHUWKDQWKH,RQLDQPRGHEHFDXVHRIWKHPLQRU EXWLW VRXQGV D OLWWOH EULJKWHU WKDQ WKH PLQRU VFDOH EHFDXVH RI WKH 0DMRU ,W LV DV
FRPPRQ VFDOH LQ MD]] DQG HVSHFLDOO\ EOXHV 0DNH VXUH WR FRQVXOW WKH 6FDOH &RPSDULVRQ &KDUWV DWWHUZDUGV WR ORRN IRU WKHVH GLIIHUHQFHV

1RZ OLNH ZLWK WKH SHQWDWRQLF PRGHV ZH ZLOO SOD\ WKLV PRGH LQ SDUDOOHO VLQFH RXU GURQH QRWH LV & 7KDW PHDQV WKDW ZH ZLOO SOD\ & 'RULDQ PRGH RYHU & LQ WKH LPSURYLVDWLRQ H[FHUSW

)LUVW ZH QHHG WR ILJXUH RXW WKH QRWHV LQ &'RULDQ ZKLFK LV VXSHU HDV\ EHFDXVH ZH FDQ MXVW DSSO\ LWV'RULDQ VFDOH IRUPXOD RU LWV LQWHUYDO VWUXFWXUH ERWK RI ZKLFK
ZH 'UHIDPLOLDU ZLWK

& † 6 † ' † 7 † (E † 7 †) † 6 † $ † 7 † * † 7 † %E 2 & † 7 †

&DQ\RX H[SODLQ ZK\ ZH XVHG E 'IV WR ZULWH RXW WKHVH QRWHV DQG QRW 'IV"

'RULDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JO (LZQ'

$JDLQ OLVWHQ WR WKH HIIHFW RI HDFK QRWH RYHU WKH GURQH QRWH 1RWLFH ZKLFK QRWHV DUH VWDEOH DQG VDIH VRXQGLQJ DQG ZKLFK RQHV DUH PRUH GLVVRQDQW SURYLGLQJ WHQVLRQ DQG KRZ WKDW WHQVLRQ LV UHOHDVHG WR D VWDEOH QRWH

3KU\JLDQ 0RGH

7KH WKLUG PRGH LV WKH 3KUJLDQ PRGH ,W VWDUWV RQ WKH UG QRWH RI WKH 0DMRU VFDOH ,W LV D PLQRU PRGH EHFDXVH RI WKH PLQRU WKRXJK DJDLQ LW LV QRW WKH QDWXUDO PLQRU VFDOH ,Q (LWV QRWHV DUH ( ) * $ % & '

,WKDVD

5RRW PLQRU QG PLQRU UG 3HUIHFW WK 3HUIHFW WK PLQRU WK PLQRU WK

7KH 3KUJLDQ PRGH LV GDUN VRXQGLQJ DQG GXH WR LWV PLQRU QG LV YHU\ H[RWLF VRXQGLQJ 7KH PLQRU QG QRWH LV MXVW D KDOI VWHS DERYH WKH 5RRW VR WKLV QRWH DGGV D ORW RI GLVVRQDQFH EHFDXVH LW QDWXUDOO\ZDQWV WR UHVROYH WR WKH QHDUHVW WRQLF WKH
5RRW 7KLV PRGH LV XVHG LQ VRPH MD]] PHWDO DV ZHOO DV /DWLQ DQG ,QGLDQ LQIOXHQFHG PXVLF

,Q WKH DXGLR H[DPSOH ZH XVH & 3KUJLDQ RYHU WKH & GURQH QRWH 7KH QRWHV LQ & 3KUJLDQ DUH

& 5 † 'E P † (E P †) † 3 * † 3 $E P † %E P

3KUJLDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JOGYUNH

/\GLDQ 0RGH

7KH IRXUWK PRGH LV WKH /\GLDQ PRGH ,W VWDUWV RQ WKH QRWH RI WKH 0DMRU VFDOH 7KLV LV D PDMRU VFDOH EHFDXVH LW¶V LV PDMRU DQG LWV QRWHV LQ) DUH) * $ % & ' (

,WKDVD

5RRW 0DMRU QG 0DMRU UG $XJPHQWHG WK 7ULWRQH 3HUIHFW WK 0DMRU WK 0DMRU WK

7KH /\GLDQ PRGH LV D YHU\ SOHDVDQW VRXQGLQJ PRGH ++ VLPLODU WR WKH PDMRU VFDOH LW GLIIHUV IURP LWV RQO\ E\ RQH QRWH WKH 7ULWRQH RQO\ VOLJKWO\ PRUH H[RWLF 7KHUH LV D VXEWOH GLVVRQDQFH LQ WKLV PRGH WKRXJK LW LV D PDMRU PRGH DQG VR LW WHQGV WR VRXQG UDWKHU FRPSOH[HYHQ VRSKLVWLFDWHG ,W LV ZLGHO\ XVHG LQ MD]] LQ SODFH RI D PDMRU VFDOH DQG RYHU FHUWDLQ MD]] FKRUGV

6LQFH ZH ¶OO EH XVLQJ &/\GLDQ PRGH WR SOD\ RYHU WKH &GURQH QRWH ZH ¶OO QHHG WKH QRWHV RI WKH &/\GLDQ VFDOH

& 5 († 0) † 0 ' † $XJ 0 % † 0 $ † 3 * †

/\GLDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JO <W9 0:

0L[RO\GLDQ 0RGH

7KH ILIWK PRGH LV WKH 0L[RO\GLDQ PRGH ,W VWDUWV RQ WKH QRWH RI WKH 0DMRU VFDOH ,W LV D PDMRU PRGH DQG LWV QRWHV LQ * DUH * $ % & ' ( )

,WFRQVLVWVRID

5RRW 0DMRU QG 0DMRU UG 3HUIHFW WK 3HUIHFW WK 0DMRU WK PLQRU WK

7KH 0L[RO\GLDQ PRGH LV D JUHDW EOXHV VFDOH DQG KDV D URXQG VWDEOH VRXQG /LNH ZLWK WKH /\GLDQ PRGH WKH RQO\ GLIIHUHQFH WR WKH 0DMRU VFDOH LV RQH QRWH ++ WKH PLQRU WK

,Q WKH DXGLR H[DPSOH ZH ZLOO XVH & 0L[RO\GLDQ WR SOD\ RYHU & QRWH ,WV QRWHV DUH

& 5 † 0 $ † 3 * † 3 († 0) † 0 ' † %E P

0L[RO\GLDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JO Q.$35Y

$HROLDQ 0RGH

7KH VL[WK PRGH LV WKH $HROLDQ PRGH 7KLV LV WKH 1DWXUDO PLQRU VFDOH ,Q $ LWV QRWHV DUH $ % & ' ( ) *

,WKDVD

5RRW 0DMRU QG PLQRU UG 3HUIHFW WK 3HUIHFW WK PLQRU WK PLQRU WK

7KH $HROLDQ PRGH LV TXLWH GDUN HYHQ VDG VRXQGLQJ WKRXJK LW LV QRW DOWRJHWKHU GLVVRQDQW DQG LW LV ZLGHO\ XVHG LQ YLUWXDOO\ DOO W\SHV RI PXVLF : H KDYH H[DPLQHG WKLV VFDOH LQ WKH PLQRU VFDOH VHFWLRQ

,Q WKH LPSURYLVDWLRQ H[FHUSW ZH ZLOO XVH & $HROLDQ PRGH RU & 1DWXUDO PLQRU VFDOH ,WV QRWHV DUH

& 5 † 0 ' † (E P †) † 3 * † 3 $E P † %E P

$HROLDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JO NN*=/K

/RFULDQ PRGH

7KH VHYHQWK DQG WKH ILQDO PRGH LV WKH /RFULDQ PRGH ,WV WVWDUWV RQ WKH QRWH RI WKH 0DMRU VFDOH ,Q WKH FDVH RI & 0DMRU LW WVWDUWV RQ % VR LQ % LWV QRWHV DUH % & ' ( ) * $

,WFRQWDLQVD

5RRW PLQRU QG PLQRU UG 3HUIHFW WK GLPLQLVKHG WK 7ULWRQH PLQRU WK PLQRU WK

7KLV PRGH LV VWUDQJH DQG UDUHO\ XVHG ,W LV D PLQRU VFDOH EXW ERWK LWV QG DQG WK QRWHV DUH IODW ,W LV WKH RQO\ GLDWRQLF PRGH ZLWKRXW D WK 3HUIHFW WK /RFULDQ PRGH WKXV LV KLJKO\ XQVWDEOH +LVWRULFDOO\ WKLV VFDOH ZDV DYRLGHG DOWRJHWKHU ,WV VRXQG LV KHDY\ GLVVRQDQW DQG XQVWDEOH

:H 'OO EH XVLQJ & /RFULDQ LQ WKH LPSURYLVDWLRQ H[FHUSW RYHU WKH & GURQH QRWH 7KH QRWHV LQ &/RFULDQ DUH

& 5 †'E P †(E P †) † 3 *E GLP †$E P †%E P

/RFULDQ PRGH DXGLR H[DPSOH LQ & ! KWWS JRR JO L '95*

'LDWRQLF 0RGHV &RPSDULVRQ &KDUWV 3OXV 306 ([HUFLVH

, KRSH WKDW \RX FDQ VHH E\ QRZ KRZ PRGHV DUH HDV\ RQFH \RX XQGHUVWDQG WKHP IXQGDPHQWDOO\

7R VXPPXS KHUH 'V D WDEOH VKRZLQJ WKH GLDWRQLF PRGHV

MODES	NOTES	1 R	2 m2	3 M2	4 m3	5 M3	6 P4	7 Tritone	8 P5	9 m6	10 M6	11 m7	12 M7	Octave
	1st mode Ionian (Natural Major scale)	C		D		E	F		G		A		B	C
	2nd mode Dorian	D		E	F		G		A		B	C		D
	3rd mode Phrygian	E	F		G		A		B	C		D		E
	4th mode Lydian	F		G		A		B	C		D		E	F
	5th mode Mixolydian	G		A		B	C		D		E	F		G
	6th mode Aeolian (Natural minor scale)	A		B	C		D		E	F		G		A
	7th mode Locrian	B	C		D		E	F		G		A		B

7DEOH 'LDWRQLF PRGHV LQ &
$OO WKHVH PRGHV DUH UHODWLYH WR & 0DMRU VFDOH

$QG KHUH 'V D WDEOH VKRZLQJ DOO PRGHV ZLWK WKHLU UHVSHFWLYH LQWHUYDOV DQG QRWHV

Ionian	R	M2	M3	P4	P5	M6	M7	Intervals
	1	**2**	**3**	**4**	**5**	**6**	**7**	Notes
Dorian	R	M2	m3	P4	P5	M6	m7	Intervals
	1	**2**	**b3**	**4**	**5**	**6**	**b7**	Notes
Phrygian	R	m2	m3	P4	P5	m6	m7	Intervals
	1	**b2**	**b3**	**4**	**5**	**b6**	**b7**	Notes
Lydian	R	M2	M3	Aug4	P5	M6	M7	Intervals
	1	**2**	**3**	**#4**	**5**	**6**	**7**	Notes
Mixolydian	R	M2	M3	P4	P5	M6	m7	Intervals
	1	**2**	**3**	**4**	**5**	**6**	**b7**	Notes
Aeolian	R	M2	m3	P4	P5	m6	m7	Intervals
	1	**2**	**b3**	**4**	**5**	**b6**	**b7**	Notes
Locrian	R	m2	m3	P4	dim5	m6	m7	Intervals
	1	**b2**	**b3**	**4**	**b5**	**b6**	**b7**	Notes

7DEOH 'LDWRQLF PRGHV ZLWK WKHLU LQWHUYDOV DQG QRWHV

6WXG\ WKLV FKDUW ,W LV YHU\ LPSRUWDQW FKDUW IRU WKH GLDWRQLF PRGHV DQG \RX ZLOO QHHG WR PHPRUL]H LW LI \RX ZDQW WR XVH PRGHV LQ \RXU SOD\LQJ HIILFLHQWO\ $OVR WDNH VRPH WLPH WR DQVZHU WKH IROORZLQJ TXHVWLRQV

- +RZ E\ DSSHDUDQFH" 1RWLFH WKDW 'RULDQ DGGV E\ RQ WKH DQG WKH DQG 3KUJLDQ DGGV IODWV MXVW EHKLQG WKRVH RQ WKH DQG WKH
- :KDW LV WKH RQO\ PRGH ZLWK D DQG ZKHUH"
- :KDW LV WKH PRGH ZLWK RQO\ RQH E\ DQG ZKHUH"
- :KDW LV WKH PRGH ZLWK WKH PRVW IODWV DQG ZKHUH DUH WKH\ORFDWHG"
- :KDW LV WKH RQH ELGLIIHUHQFH EHWZHHQ $HROLDQ DQG 3KUJLDQ PRGHV DQG ZK\"
- :K\ GRHV /RFULDQ PRGH VRXQG REVFXUH DQG ZK\ LV LW GLIILFXOW WR XVH"
- :K\ KDYH ZH ZULWWHQ E IRU WKH /RFULDQ PRGH LQVWHDG RI "

3DUHQW 0DMRU 6FDOH ([HUFLVH

:KHQ XVLQJ PRGHV \RX VKRXOG WKLQN DERXW WKHP LQ SDUDOOHO WKDW LV WUHDW WKHP DV VHSDUDWH VFDOHV EXW DW WKH VDPH WLPH LW LV LPSRUWDQW WR NQRZ WKHLU UHODWLYH VFDOHV
DQG ZKDW LV WKH 3DUHQW 0DMRU VFDOH RI HDFK PRGH LQ DQ\NH\

)RU H[DPSOH SDUHQW PDMRU VFDOH RI (/RFULDQ LV □

□) PDMRU DQG SDUHQW PDMRU VFDOH RI) /\GLDQ LV □

□& PDMRU

/HW ¶V H[SODLQ WKH VHWZR)LUVW (/RFULDQ † ZH NQRZ WKDW /RFULDQ LV WK WKH PRGH RI LWV 3DUHQW 0DMRU 6FDOH 306 :H DOVR NQRZ WKDW LQ D 0DMRU VFDOH WK WKH QRWH LV MXVW D KDOI VWHS EHKLQG WKH 5RRW QRWH ,Q WKLV FDVH D QRWH WKDW LV D KDOI VWHS XS
IURP (LV) VR 306 RI (/RFULDQ LV) 0DMRU RU) ,RQLDQ ERWK DUH FRUUHFW DOWKRXJK LW ¶V PRUH FRUUHFW WR VD\ 0DMRU LQ WKLV FDVH)LJXULQJ RXW WKH 306 IRU WKH /RFULDQ PRGH LV YHU\ HDV\ LQ DQ\ NH\

<RX FDQ DSSO\ WKLV SURFHVV IRU DOO PRGHV VLPSO\ E\ FRXQWLQJ WKH VWHSV DQG KDOI VWHSV

- 'RULDQ LV MXVW RQH ZKROH VWHS XS IURP LWV UHODWLYH 306 5RRW RU KDOI VWHSV GRZQ IURP WKH URRW RFWDYH 6R LQ D\ 'RULDQ NH\ \RX FDQ MXVW FRXQW WZR KDOI VWHSV RU
- VHPLWRQHV EDFN LQ \RXU KHDG)RU H[DPSOH 306 RI ' 'RULDQ LV & 0DMRU VFDOH 3KU\JLDQ LV WZR ZKROH VWHSV XS IURP WKH 306 URRW RU KDOI VWHSV ,Q WKH RSSRVLWH GLUHFWLRQ LW LV KDOI VWHSV GRZQ IURP WKH URRW RFWDYH
- /\GLDQ LV KDOI VWHSV XS IURP WKH URRW RU KDOI VWHSV GRZQ IURP WKH URRW RFWDYH
- 0L[R\GLDQ LV KDOI VWHSV XS IURP WKH URRW RU KDOI VWHSV GRZQ IURP WKH URRW RFWDYH
- $HROLDQ LV KDOI VWHSV XS IURP WKH URRW RU KDOI VWHSV GRZQ IURP WKH URRW RFWDYH
- /RFULDQ LV KDOI VWHSV XS IURP WKH URRW RU KDOI VWHS GRZQ IURP WKH RFWDYH
- ,RQLDQ LV]HUR KDOI VWHSV XS RU GRZQ IURP WKH URRW

%XW ZKDW LI ZH KDYH D PRGH WKDW LV LQ WKH PLGGOH RI WKH 306 QDPHO\ 3KU\JLDQ /\GLDQ 0L[R\GLDQ RU $HROLDQ DQG ZH GRQ ¶W ZDQW WR ERWKHU ZLWK FRXQWLQJ WKH KDOI VWHSV"

)RU WKDW OHW ¶V GHWHUPLQH WKH 306 RI) /\GLDQ 7KH SURFHVV ZKLFK FDQ EH GRQH IRU DQ\ PRGH LV DVIROORZV LW ZDV GHVFULEHG EULHIO\ HDUOLHU LQ WKH 3DUHQW VFDOH VHFWLRQ

)LUVW ZH OLVW RXW WKH QRWHV RI) /\GLDQ \RX FDQ XVH 7DEOH † 'LDWRQLF PRGHV ZLWK WKHLU LQWHUYDOV IRU WKLV

) 5 2 († 0) † 0 ' † 3 & † % † 0 $ † 0 * †

6LQFH ZH NQRZ WKDW /\GLDQ LV WK PRGH RI LWV 306 ZH ORRN DW WKH QRWHV DQG VHH WR ZKLFK QRWH WKH) FRPHV DV WK "

,W ĺV&

& ' ( ) * $ %

6R 306 RI) /\GLDQ LV & 0DMRU VFDOH

$V DQ H[HUFLVH WU\ WR ILJXUH RXW WKH 3DUHQW 0DMRU VFDOH RI WKH IROORZLQJ PRGHV

* 'RULDQ"
) 0L[RO\GLDQ"
(3KU\JLDQ"
$ $HROLDQ"
* /\GLDQ"
' /RFULDQ"
%,RQLDQ"
'E 0L[RO\GLDQ"

7KHUH ZLOO EH DQVZHUV SURYLGHG DW WKH HQG RI WKH ERRN LQ WKH &KHDW 6KHHW VHFWLRQ

+RZ WR +HDU D 0RGH 3UDFWLFDO ([HUFLVH

,W LV RQH WKLQJ WR NQRZ ZKDW WKH PRGHV DUH WR NQRZ ZKDW PRGDOLW\ LV LQ DEVWUDFWLRQ DQG WR EH DEOH WR QDPH WKH PRGHV HYHQ WR VSHOO WKHLU LQWHUYDOV DQG UHODWLRQVKLS ,W LV RQH WKLQJ WR NQRZ D VFDOH EXW LW LV TXLWH DQRWKHU WR XQGHUVWDQG LW SUDFWLFDOO\ ,W LV RQH WKLQJ WR KDYH LW LQ \RXU PLQG LW LV DQRWKHU WR KDYH LW LQ \RXU HDUV 7KH SRLQW RI OHDUQLQJ VFDOHV DQG WKHLU PRGHV LV WR EH DEOH WR PDNH XVH RI WKHP DQG WKDW PHDQV EHLQJ DEOH WR UHDOO\ KHDU WKHP DQG WR NQRZ IURP WKHLU QDPH ZKDW WKH\ ZLOO VRXQG OLNH DQG KRZ WKH\ ZLOO IHHO

,Q VRPH PXVLF FRXUVHV WKHUH LV D ORW RI IRFXV RQ IRUPDO HDU WUDLQLQJ DQG VLJKW VLQJLQJ LQ ZKLFK VWXGHQWV DUH DVNHG WR UHFRJQL]H QDPH DQG QRWDWH VFDOHV DPRQJ RWKHU WKLQJV E\ WKHLU VRXQG DQG VLQJ WKHP DFFXUDWHO\ DIWHU RQO\ VHHLQJ WKHP ZULWWHQ GRZQ RU EHLQJ WROG WKHLU QDPH

,W LV QRW IRU HYHU\PXVLFLDQ QHFHVVDU\WR EH WUDLQHG LQ WKDW ZD\ 7KH DELOLW\WR DWWDFK D SDUWLFXODU QDPH DQG D SDUWLFXODU VHW RI ZULWWHQ V\PERO WR D VRXQG DQG
WR EH DEOH WR VLQJ IURP PHPRU\WKRVH PXVLFDO VWUXFWXUHV LV IDU UHPRYHG IURP WKH DFW RI DFWXDOO\SODLQJ RU ZULWLQJ ZLWK WKRVH VWUXFWXUHV

%XW VRPH IRUP RI HDU WUDLQLQJ LQ ZKLFK WKHUH LV D JHQHUDO HPRWLRQDO
XQFRQVFLRXV VHQVH RI ZKDW GLIIHUHQW VFDOHV GR DQG KRZ WKH\ ZLOO LPSDFW WKH PXVLF LV YHU\ LPSRUWDQW WR EHLQJ D JRRG PXVLFLDQ (YHQ PXVLFLDQV ZKR GRQ ¶W NQRZ DQ\WKLQJ DERXW WKHRU\ LI WKH\ DUH JRRG KDYH WKLV VRUW RI LQWHUQDO
XQFRQVFLRXV FRQQHFWLRQ WR GLIIHUHQW VHWV RI LQWHUYDOV

,W LV KRZ \RX NQRZ ZKDW ZLOO ZRUN DQG ZKDW ZLOO QRW ZRUN DQG KRZ \RX NQRZ ZKDW \RX OLNH DQG ZKDW \RX GRQ ¶W OLNH ,Q VKRUW LW LV KRZ \RX NQRZ ZKDW WR SOD\ DQG KRZ WR VRXQG OLNH \RX KRZ WR KDYH D VW\OH RI \RXU RZQ

6R KRZ FDQ \RX GHYHORS WKDW VRUW RI IDPLLDULW\ ZLWK VFDOHV DQG WKHLU PRGHV" 7KHUH LV QR VKRUWFXW UHDOO\ \RX VLPSO\ KDYH WR OHDUQ WR KHDU WKHP DQG XVH WKHP D ORW %XW WKHUH DUH VRPH H[HUFLVHV EHMLGH WKH UHJXODU HDU WUDLQLQJ H[HUFLVHV WKDW FDQ KHOS

7KH H[HUFLVH LV VLPSOH

3OD\ D GURQH QRWH RQ JXLWDU WKH (VWULQJ ZRXOG EH PRVW QDWXUDO ZKLFK ZLOO HVWDEOLVK \RXU NH\ \RXU WRQDO FHQWHU 7KHQ\RX FDQ SOD\ YDULRXV VFDOHV DQG PRGHV LQ WKDW NH\ 6R SOD\ DQ (QRWH IRU H[DPSOH DQG OHW LW GURQH VXVWDLQ DQG WKHQ SOD\ DQ (,QLDQ DQG WKHQ DQ ('RULDQ DQG WKHQ DQ (3KU\JLDQ DQG VR RQ 3OD\ DOO RI WKH PRGHV WKDW VKDUH WKH VDPH WRQDO FHQWHU 7KLV LV ZKDW ZH KDYH GRQH IRU WKH 3HQWDWRQLF DQG 'LDWRQLF PRGHV ¶I DXGLR H[DPSOHV EXW\RX VKRXOG EH DEOH WR GR LW RQ \RXU RZQ QRZ 7U\ LW /LVWHQ IRU GLIIHUHQFHV LQ KDUPRQLF HIIHFW DQG IHHO IRU GLIIHUHQFHV LQ RYHUDOO DIIHFW

2QFH \RX KDYH GRQH WKLV LW LV XVHIXO WR PRYH RQ WR SOD\LQJ RYHU D VLQJOH FKRUG RU HQWLUH FKRUG SURJUHVVLRQV 0DNH RUILQG D EDFNLQJ WUDFN IRU HDFK PRGH DQG SOD\ RYHU WKRVH SURJUHVVLRQV XVLQJ WKRVH PRGHV <RX ZLOO GHYHORS D VHQVH IRU WKH GLIIHUHQFHV EHWZHHQ VFDOHV +RZHYHU LI \RX ¶UH QRW IDPLOLDU ZLWK FKRUGV DQG FKRUG SURJUHVVLRQV \HW \RX ZLOO EH DEOH WR GR WKLV DIWHU \RX JR WKURXJK WKH &KRUG VHFWLRQ ODWHU LQ WKH ERRN

)LQDOO\ EHJLQ VXEVWLWXWLQJ VFDOHV DQG PRGHV IRU HDFK RWKHU RYHU WKH VDPH FKRUG RU SURJUHVVLRQ ,I \RX DUH SOD\LQJ RYHU D PLQRU SURJUHVVLRQ IRU LQVWDQFH LQ $ PLQRU \RX FDQ SHUKDSV EHJLQ E\ SOD\LQJ LQ $ $HROLDQ QDWXUDO PLQRU VFDOH DQG HQG E\ SOD\LQJ LQ $ 3KU\JLDQ 7KLV WDNHV WLPH WR WUXO\ XQGHUVWDQG DQG EH DEOH WR GR EXW LW LV ZHOO ZRUWK WKH HIIRUW %\ WKH HQG RI WKLV ERRN \RX ZLOO KDYH D PXFK EHWWHU
XQGHUVWDQGLQJ RI KRZ WR JR DERXW WKLV

<RX PLJKW DOVR FKRRVH D VLQJOH FKRUG D 0DMRU WK FKRUG IRU LQVWDQFH DQG SOD\ E\ F\FOLQJ WKURXJK DOO RI WKH YDULRXV PRGHV RI WKH SHQWDWRQLF GLDWRQLF KDUPRQLF PLQRU DQG PHORGLF PLQRU VFDOHV <RX FDQ HYHQ XVH VFDOHV WKDW GRQ 'W PDNH DQ\ QDWXUDO VHQVH OLNH D 'RULDQ RYHU D 0DMRU FKRUG MXVW WR KHDU ZKDW LW VRXQGV OLNH 'RQJ WKLV VRUW RI VXEVWLWXWLRQ ZLOO KHOS \RX UHDOO\ OHDUQ WR IHHO WKH GLIIHUHQFHV EHWZHHQ VFDOHV DQG ZLOO HQFRXUDJH \RX WR UHPHPEHU FHUWDLQ KDUPRQLF WHFKQLTXHV DQG H[RWLF VRXQGV WKDW \RX HQMR\ DQG ZDQW WR LQFRUSRUDWH LQ \RXU VW\OH

+DUPRQLF 0LQRU 6FDOH †† +RZ DQG :K\ :DV ,W 'HULYHG IURP WKH 1DWXUDO 0LQRU 6FDOH

7KH GLDWRQLF PRGHV DUH XVHIXO DQG WKH\ RIIHU D KRVW RI KDUPRQLF SRVVLELOLWLHV 7KH\ DUH QRW KRZHYHU H[KDXVWLYH 7KHUH DUH WRQHV LQ WKH FKURPDWLF VFDOH DQG HYHQ LI \RX OLPLW \RXUVHOI WR FRPELQLQJ WKRVH WRQHV LQWR QRWH PDMRU RU PLQRU VFDOHV WKHUH DUH PRUH WKDQ SRVVLELOLWLHV

7KH GLDWRQLF VFDOH LV RQH YHU\ VWDEOH FXWWLQJ RI WKH FKURPDWLF VFDOH DQG LW RUJDQL]HV DQ RFWDYH LQ D SDUWLFXODU\ XVHIXO ZD\ IRU PRVW SODYHUV PXFK RI WKH WLPH EXW LW KDV D YHU\ SDUWLFXODU VRXQG 6RPHWLPHV PXVLFLDQV ZDQW D GLIIHUHQW
VRXQG DQG ZKHQ WKH\ GR WKH\ UHDFK IRU RWKHU RUJDQL]DWLRQV RI WRQHV *HQHUDOO\ WKHVH QHZ RUJDQL]DWLRQV DUH GHULYHG IURP WKH GLDWRQLF VFDOH LQ VRPH ZD\ DQG VR RQFH \RX NQRZ WKH GLDWRQLF PRGHV OHDUQLQJ RWKHU VHWV RI VFDOHV LV RIWHQ OHVV GLIILFXOW

+LVWRULFDOO\ WKH PRVW LPSRUWDQW QRWH VFDOH WR EH GHULYHG IURP WKH GLDWRQLF
VFDOH ZDV ZKDW LV FDOOHG WKH +DUPRQLF PLQRU VFDOH 7KH KDUPRQLF PLQRU VFDOH ZDV WKH UHVXOW RI WKH GHVLUH WR PDNH WKH PLQRU VFDOH UHVROYH LQ D SDUWLFXODU ZD\
ZKHQ SOD\HG DVFHQGLQJ

7KH PDMRU VFDOH KDV D PDMRU 6WK DQG VR ZKHQ LW LV SOD\HG IURP VWDUW WR ILQLVK

JRLQJXS WKHUH LV D VWURQJ UHVROXWLRQ DW WKH HQG ++ WKH ODVW QRWH LV RQO\ DKDOI VWHS
EHORZ WKH URRW LQ WKH QH[W RFWDYH WKH PRUH D QRWH LV FORVHU WR WKH URRW WKH PRUH LW

ZDQWV WR UHVROYH WR LW DQG VR ZKHQ RXU HDUV JHW WR WKH QRWH RI WKH VFDOH WKH\
YHU\ QDWXUDOO\ IHHO WKH 5RRW FRPLQJ QH[W ZKLFK LV OLNH WKH FHQWHU RI JUDYLW\ LQ PXVLF 7KLV LV SDUWLFXODUO\ XVHIXO IRU FRPSRVLQJ DQG LPSURYLVLQJ PHORGLHV LQ PDMRU NH\V EHFDXVH LW PDNHV LW HDV\ WR UHVROYH WHQVLRQ ZKLFK LV XOWLPDWHO\ ZKDW PHORGLHV DUH DOO DERXW

%XW LQ D PLQRU NH\ LW LVQ ªW VR HDV\ 7KH QRWH RI WKH PLQRU $HROLDQ VFDOH DQG DOVR WKH 'RULDQ 3KUJLDQ DQG /RFULDQ PRGHV LV D IXOO VWHS DZD\ IURP WKH 5RRW LQ WKH QH[W FWDYH 7KLV PHDQV WKDW WKH 5RRW GRHVQ ªW SXOO RQ WKH QRWH LQ WKH VDPH ZD\ WKDW LW GRHV LQ WKH PDMRU VFDOH ZKLFK LQ WXUQ PHDQV WKDW WKHUH LV OHVV RI D VHQVH RI PDJQHWLVP EHWZHHQ WKH QRWH DQG WKH 5RRW

7KH UHVXOW SUDFWLFDOO\ LV WKDW UHVROXWLRQV LQ D PLQRU NH\ ZKHWKHU LQ WKH FKRUGV
RU LQ WKH PHORG\ IHHO OHVV VWDEOH WKDQ UHVROXWLRQV LQ D PDMRU NH\ 7KLV FDQ EH
VROYHG KRZHYHU E\ DOWHULQJ WKH PLQRU VFDOH VOLJKWO\

6RPHWLPHV DJR FRPSRVHUV UHDOL]HG WKDW LI WKH\ UDLVHG WKH QRWH LQ WKH PLQRU VFDOH E\ D KDOI VWHS DQG OHIW WKH UHVW RI WKH VFDOH XQWRXFKHG WKH\ FRXOG FUHDWH D
QHZ VFDOH WKDW KDG PRVW RI WKH SURSHUWLHV RI WKH PLQRU VFDOH †† DJHQHUDOO\ GHHS GDUN IHHOLQJ †† EXW WKDW DOVR KDG WKH SRVVLELOLW\ RI VWDEOH UHVROXWLRQV VLQFH QRZ
WKHUH ZDV RQO\ D KDOI VWHS EHWZHHQ WKH QRWH RI WKH VFDOH DQG WKH URRW MXVW OLNH
WKH PDMRU VFDOH

7KLV QHZ VFDOH ZDV FDOOHG WKH +DUPRQLF PLQRU VFDOH DQG LWV VWUXFWXUH LV GHULYHG
IURP WKH 1DWXUDO PLQRU VFDOH

+DUPRQLF 0LQRU 6FDOH 6WUXFWXUH

7KH KDUPRQLF PLQRU VFDOH GHULYHV LWV VWUXFWXUH IURP WKH PLQRU VFDOH ZKLFK LV D YHUVLRQ RI WKDW GLDWRQLF VWUXFWXUH RQO\ UHRUGHUHG ZKROH KDOI ZKROH ZKROH KDOI ZKROH ZKROH 2QO\ QRZ WKH ILQDO QRWH LV UDLVHG ZKLFK PHDQV WKDW WKH ODVW LQWHUYDO LV D KDOI VWHS DQG WKH VHFRQG WR ODVW LQWHUYDO KDV EHHQ LQFUHDVHG WR D VWHS
DQG D KDOI

,Q $ ZH VDLG WKDW WKH QRWHV RI WKH PLQRU VFDOH DUH $ % & ' ( ) * 7KH QRWHV RI WKH $ KDUPRQLF PLQRU VFDOH WKHQ DUH $ % & ' ( ) *

6RWKHKDUPRQLFPLQRUVWUXFWXUHLVWKLV

ZKROH KDOI ZKROH ZKROH KDOI ZKROH KDOI KDOI

RU

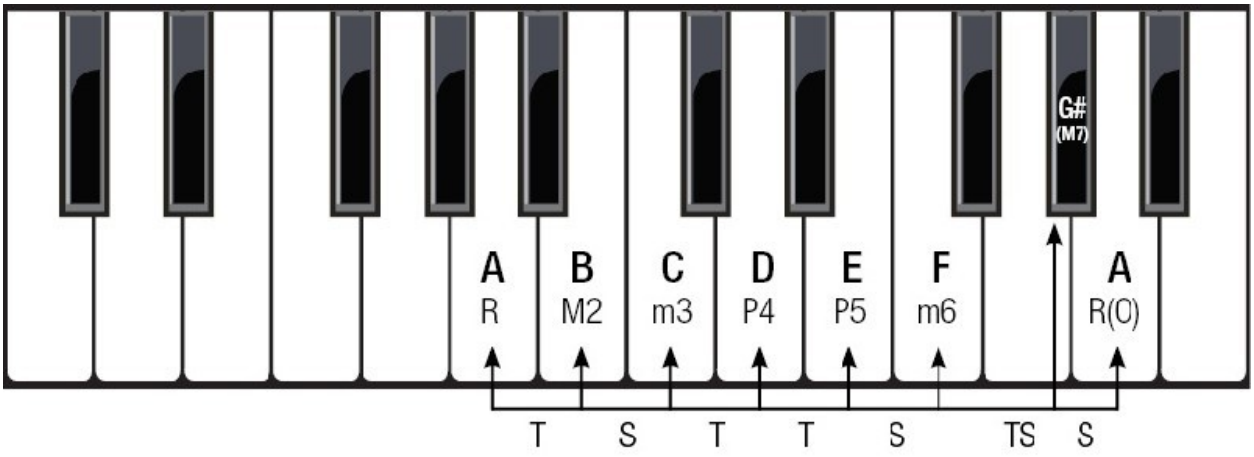
7 6 7 7 6 76 6

,QWHUPVRILQWHUYDOV

5 ♯ 6 ♯ 0 ♯ 7 ♯ P ♯ 6 ♯ 3 ♯ 7 ♯ 3 ♯ 7 ♯ P 5 ♮ 6 ♯ 0 ♯ 76 ♯

,Q $

$ ♯ 6 ♯ * ♯ 76 ♯ (♯ 6 ♯) ♯ 7 ♯ ' ♯ 7 ♯ & ♯ 6 ♯ % ♯ 7 ♯ $



)LJXUH +DUPRQLF PLQRU VFDOH VWUXFWXUH LQ $

%HFDXVH RI WKH VWUXFWXUH OLNH WKLV VWHS DQG D KDOI EHWZHHQ WK DQG WK QRWH KDUPRQLF PLQRU VFDOH LV QRW D GLDWRQLF VFDOH

7KH 0RGHV RI WKH +DUPRQLF 0LQRU 6FDOH :LWK $XGLR ([DPSOHV

1RZ ZH ¶UH JHWWLQJ LQWR VRPH H[RWLF VWXII WKDW PDQ\ SHRSOH FRQVLGHU DGYDQFHG %XW LW UHDOO\ LVQ ¶W VLQFH \RX QRZ XQGHUVWDQG PRGHV /LNH WKH PDMRU VFDOH WKHUH DUH QRWHV LQ WKH KDUPRQLF PLQRU VFDOH $OVR OLNH WKH GLDWRQLF VFDOH WKHUH DUH PRGHV RI WKH KDUPRQLF PLQRU VFDOH 7KH VDPH FRQFHSW ZH KDG EHIRUH DSSOLHV KHUH DV ZHOO VR LW VKRXOG EH UHDOO\ VLPSOH

+DUPRQLF PLQRU PRGHV GR KDYH WKHLU RZQ QDPHV ZKLFK DUH QRW YHU\ LQWXLWLYH DQG PD\ VHHP FRQIXVLQJ ,Q HVVHQFH WKH\ DUH MXVW YDULDWLRQV RI WKH GLDWRQLF PRGHV "I QDPHV EHFDXVH WKH\ VKRZ WKHLU UHODWLRQ WR WKH PLQRU VFDOH DQG RWKHU GLDWRQLF PRGHV WKH\ "UH GHULYHG IURP

+HUH DUH WKH KDUPRQLF PLQRU PRGHV +00 IRU VKRUW OLVWHG LQ $ DORQJ ZLWK WKH DXGLR H[DPSOHV IROORZLQJ WKH VDPH IRUPDW ZH KDG VR IDU

+DUPRQLF 0LQRU 0RGH † $HROLDQ

7KH ILUVW PRGH RI WKH KDUPRQLF PLQRU VFDOH LV MXVW WKH QRUPDO KDUPRQLF PLQRU VFDOH ,W FRQVLVWV RI D

5RRW 0DMRU QG PLQRU UG 3HUIHFW WK 3HUIHFW WK PLQRU WK 0DMRU WK

:K\ LV WKLV PRGH FDOOHG $HROLDQ "':HOO LI \RX FRPSDUH WKLV LQWHUYDO VWUXFWXUH ZKLFK ZH DOUHDG\ H[DPLQHG WR WKDW RI WKH UHJXODU GLDWRQLF $HROLDQ PRGH \RX ZLOO VHH WKDW LW LV WKH VDPH VWUXFWXUH EXW ZLWK RQH LPSRUWDQW GLIIHUHQFH WKH QRWH

,Q GLDWRQLF $HROLDQ ZH KDG PLQRU WK EXW KHUH ZH KDYH 0DMRU WK 7KH QRWH LV VKDUSHQHG KHQFH ZK\ PRGH RI WKH +DUPRQLF PLQRU LV FDOOHG $HROLDQ

,Q $ LW KDV WKH IROORZLQJ QRWHV $ % & ' ( ) * DQG WKRVH DUH WKH QRWHV ZH ZLOO XVH WR SOD\ RYHU WKH $ GURQH QRWH LQ WKH LPSURYLVDWLRQ H[FHUSW

+DUPRQLF PLQRU PRGH † $HROLDQ DXGLR H[DPSOH LQ $! KWWS JRR JO I PJ$

+DUPRQLF 0LQRU 0RGH † /RFULDQ

7KH VHFRQG PRGH RI WKH KDUPRQLF PLQRU VFDOH KDV D

5RRW PLQRU QG PLQRU UG 3HUIHFW WK GLPLQLVKHG WK 0DMRU WK PLQRU WK

,I \RX FRPSDUH WKH VWUXFWXUH RI WKLV PRGH WR WKH GLDWRQLF /RFULDQ PRGH \RX ZLOO VHH WKDW LW LV WKH VDPH LQWHUYDO VWUXFWXUH EXW ZLWK RQH VLJQLILFDQW GLIIHUHQFH

GLDWRQLF /RFULDQ KDV PLQRU WK DQG WKLV RQH KDV 0DMRU WK VR WKDW "V ZK\ LW "V VLPSO\ FDOOHG /RFULDQ

'LDWRQLF /RFULDQ † E † E † † E † E † E

/RFULDQ † E † E † † E † † E

7KLV PRGH LV VRPHWLPHV DOVR FDOOHG /RFULDQ QDWXUDO EHFDXVHWKH LV QR ORQJHU IODWWHQHG

,Q % +00 RU /RFULDQ QRWHV DUH % & ' ( ) * $

,Q WKH LPSURYLVDWLRQ H[FHUSW WKLV PRGH ZLOO EH SODYHG RYHU $ QRWH VR LQ RUGHU WR KHDU LWV FKDUDFWHULVWLF VRXQG ZH QHHG WR XVH $ /RFULDQ

,Q $ /RFULDQ WKH QRWHV DUH $ %E & ' (E) * DQG WKRVH DUH WKH QRWHV ZH ¶OO EH XVLQJ WR LPSURYLVH RYHU $ GURQH QRWH 1RWH WKDW WKLV LV D UDUH LQVWDQFH ZKHUH ZH KDYH WR XVH ERWK VKDUSV DQG IODWV EHFDXVH RI WKH UXOH LQ PXVLF WKHRU\ ZH WDONHG DERXW ++ WKH UXOH ZKLFK VD\V WKDW DOSKDEHW OHWWHUV VKRXOG QRW EH VNLSSHG ZKHQ ZULWLQJ RXW WKH QRWHV RI D NH\

+DUPRQLF PLQRU PRGH †
/RFULDQ DXGLR H[DPSOH LQ $! KWWS JRR JO /< 9DY

+DUPRQLF 0LQRU 0RGH † ,RQLDQ

7KH WKLUG +00 KDV D

5RRW 0DMRU QG 0DMRU UG 3HUIHFW WK $XJPHQWHG WK ZKLFK LV HQKDUPRQLFDOO\ HTXLYDOHQW WR D PLQRU WK 0DMRU WK 0DMRU WK

7KLV PRGH LV FDOOHG ,RQLDQ DQG LW ¶IV HDV\ WR WHOO ZK\ † DJDLQ MXVW FRPSDUH LWV VWUXFWXUH WR WKH UHJXODU ,RQLDQ VWUXFWXUH WKH GLIIHUHQFH LV VKRZQ LQ WKH QDPH
LWVHOI

,Q & LWV QRWHV DUH & ' ( ) * $ %

%XW DV DOZD\V VLQFH ZH ¶IUH SODLQJ RYHU WKH $ QRWH LQ WKH LPSURYLVDWLRQ H[FHUSW ZH ZLOO XVH WKH $,RQLDQ

7KH QRWHV IRU WKLV PRGH LQ $ DUH $ % & ' (HQKDUPRQLFDOO\ HTXLYDOHQW WR)) *

+DUPRQLF PLQRU PRGH †
,RQLDQ DXGLR H[DPSOH LQ $! KWWS JRR JO 8H\MJ5

+DUPRQLF 0LQRU 0RGH † 'RULDQ

7KH IRXUWK +00 KDV D

5RRW 0DMRU QG PLQRU UG $XJPHQWHG WK 3HUIHFW WK 0DMRU WK PLQRU WK
,WV QRWHV LQ ' DUH ' ( ) * $ % &

- &DQ \RX H[SODLQ ZK\ LV LW FDOOHG 'RULDQ "

,Q $ 'RULDQ WKH QRWHV DUH $ % & ' ( ) * DQG WKHVH DUH WKH QRWHV
ZH ¶OO EH XVLQJ WR SOD\ RYHU $ QRWH

+DUPRQLF PLQRU PRGH †
'RULDQ DXGLR H[DPSOH LQ $! KWWS JRR JO <E(%U

+DUPRQLF 0LQRU 0RGH 3 †KU\JLDQ

7KH ILIWK +00 KDV D

5RRW PLQRU QG 0DMRU UG 3HUIHFW WK 3HUIHFW WK PLQRU WK PLQRU WK
,Q (LWV QRWHV DUH ( ) * $ % &

- &DQ \RX H[SODLQ ZK\ LV LW FDOOHG 3KU\JLDQ "

,Q $ 3KU\JLDQ WKH QRWHV DUH $ %E & ' ( ) * DQG WKHVH DUH WKH QRWHV
ZH ¶OO EH XVLQJ WR SOD\ RYHU $ QRWH

+DUPRQLF PLQRU PRGH †
3KU\JLDQ DXGLR H[DPSOH LQ $! KWWS JRR JO]D+V+Y

+DUPRQLF 0LQRU 0RGH † /\GLDQ

7KH VL[WK +0 PRGH KDV D

5RRW $XJPHQWHG QG HQKDUPRQLFDOO\HTXLYDOHQWWR D PLQRU UG 0DMRU WK $XJPHQWHG
3HUIHFW WK 0DMRU WK 0DMRU WK
,Q) LWV QRWHV DUH) * $ % & ' (

- &DQ \RX H[SODLQ ZK\ LV LW FDOOHG /\GLDQ "

,Q $ /\GLDQ WKH QRWHV DUH $ % HQKDUPRQLFDOO\ HTXLYDOHQW WR & & ' ( ) * DQG WKHVH DUH WKH QRWHV ZH ¶OO EH XVLQJ WR SOD\ RYHU $ QRWH WR VKRZFDVH WKLV PRGH

+DUPRQLF PLQRU PRGH † /\GLDQ DXGLR H[DPSOH LQ $! KWWSV JRRJO TL-.WT

+DUPRQLF 0LQRU 0RGH 0 †L[RO\GLDQ RU 6XSHU/RFULDQ

)LQDOO\ WKH VHYHQWK +0 PRGH KDV D

5RRW PLQRU QG PLQRU UG GLPLQLVKHG WK HQKDUPRQLFDOO\ HTXLYDOHQW WR D 0DMRU
GLPLQLVKHG WK PLQRU WK GLPLQLVKHG WK HQKDUPRQLFDOO\ HTXLYDOHQW WR 0DMRU

,WV QRWHV LQ * DUH * $ % & ' ( )

* 5 † 6 † $ P † 7 † % P † 6 † & GLP † 7 † ' GLP † 7 † (P †
6 †) GLP 2 * † 76 †

7KLV VFDOH LV WKH RGGHVW VR IDU DQG KDV GLIIHUHQW QDPHV

,W LV VRPHWLPHV FDOOHG DQ $OWHUHG VFDOH VLQFH LW LV WKH 0DMRU VFDOH ZLWK HDFK RI WKH VFDOH GHJUHHV ODWHUHG DOWHUHG 7KRXJK WKLV LV QRW WKH UHDO $OWHUHG VFDOH VLQFH KDYH

EE 7KH $OWHUHG VFDOH LV DFWXDOO\ WKH PRGH RI WKH 0HORGLF PLQRU VFDOH DQG ZH ¶OO JHW WR WKDW VRRQ

5HJXODU 0DMRU VFDOH † † † † † †

+DUPRQLF PLQRU PRGH † E † E † E † E † E † EE

,W LV DOVR VRPHWLPHV FDOOHG 6XSHU/RFULDQ ZKLFK LV D IDQF\ QDPH EXW WKDW ¶V EHFDXVH LW LV WKH VDPH DV GLDWRQLF /RFULDQ EXW LW JRHV RQH VWHS IXUWKHU /RFULDQ KDV WKH 3HUIHFW WK ZKLOH LQ 6XSHU /RFULDQ WKDW QRWH LV ODWWHG GLPLQLVKHG DQG WKH E QRWH LV ODWWHG RQFH DJDLQ

'LDWRQLF /RFULDQ † E † E † † E † E † E

6XSHU /RFULDQ † E † E † E † E † E † EE

,W LV DOVR VRPHWLPHV FDOOHG 0L[RO\GLDQ EXW ZK\"

/HW ¶V WDNH RXU *0DMRU VFDOH DQG *0L[RO\GLDQ VFDOH ZKRVH 3DUHQW 0DMRU VFDOH LV & DQG OLVW RXW WKHLU QRWHV

* 0DMRU KDV * (†) † ' † & † % † $ †

* 0L[RO\GLDQ KDV * (†) † ' † & † % † $ † E

1RZ WKH WK PRGH RI WKH KDUPRQLF PLQRU VFDOH LQ WKLV FRQWH[W ZKHQ FRPSDUHG DJDLQVW *0L[RO\GLDQ ORRNV OLNH WKLV

* 0L[RO\GLDQ * (†) † ' † & † % † $ † EE

7KHSUREOHPKHUHLVWKDWWKHUHLVRQHH[WUDIODWRQWKH PDNLQJLWIXQFWLRQDVWKH 0DMRU WK LQWKLVFRQWH[W

6RZHKDYHWKUHHGLIIHUHQWQDPHVIRUWKHVDPHWKLQJ ,W "IVLPSRUWDQWWR XQGHUVWDQG HDFKQDPHDQGLWVFRQWH[W ZKDWLVLWWHOOLQJ\RX" EHFDXVHDVZHVDLG WKHQDPHV GHVFULEH D PRGH "IV UHODWLRQVKLS WR RWKHU VFDOHV .QRZLQJ WKHVH UHODWLRQVKLSV LV ZKDW ZLOO KHOS \RX ZLWK XQGHUVWDQGLQJ DQG XVLQJ PRGHV LQ \RXU SODLQJ <RX FDQ XVH DQ\QDPH WKDW\RX OLNH MXVW DV ORQJ DV\RX NQRZ KRZ LW "IV UHODWHG WR RWKHU VFDOHV DQG PRGHV ,Q P\ RSLQLRQ WKH EHVW QDPH WR XVH KHUH ZRXOG EH 6XSHU /RFULDQ

,Q $ WKH QRWHV RI WKLV PRGH DUH $ %E & 'E (E) *E DQG WKHVH DUH WKH QRWHV ZH "IOO EH XVLQJ WR SOD\ RYHU $GURQH QRWH LQ WKH EDFNLQJ WUDFN

+DUPRQLF PLQRU PRGH †
6XSHU /RFULDQ DXGLR H[DPSOH LQ $! KWWS JRR JO X\XY

1RWH WKDW +0 PRGHV FDQ KDYH GLIIHUHQW QDPHV GHSHQGLQJ RQ WKHLU FRQWH[W WKLV LV VRPHWKLQJ WKDW LV RSHQ WR LQWHUSUHWDWLRQ :KDW , "IP SUHVHQWLQJ KHUH LV WKH PRVW ORJLFDO ZD\ WKDW WKHVH PRGHV DUH XVXDOO\ QDPHG E\

+DUPRQLF 0LQRU 0RGHV &RPSDULVRQ &KDUWV

	NOTES	1 R	2 m2	3 M2	4 m3	5 M3	6 P4	7 Tritone	8 P5	9 m6	10 M6	11 m7	12 M7	 Octave
MODES	1st mode Aeolian #7 (Harmonic minor scale)	A		B	C		D		E	F			G#	A
	2nd mode Locrian #6	B	C		D		E	F			G#	A		B
	3rd mode Ionian #5	C		D		E	F			G#	A		B	C
	4th mode Dorian #4	D		E	F			G#	A		B	C		D
	5th mode Phrygian #3	E	F			G#	A		B	C		D		E
	6th mode Lydian #2	F			G#	A		B	C		D		E	F
	7th mode Myxolydian #1	G#	A		B	C		D		E	F			G#

7DEOH +DUPRQLF PLQRU PRGHV LQ $

$QG KHUH ¶V D WDEOH VKRZLQJ DOO KDUPRQLF PLQRU PRGHV ZLWK WKHLU UHVSHFWLYH LQWHUYDOV DQG QRWHV

Aeolian #7 - Harmonic minor scale	R	M2	m3	P4	P5	m6	M7	Intervals
	1	**2**	**b3**	**4**	**5**	**b6**	**7**	Notes
Locrican #6	R	m2	m3	P4	dim5	M6	m7	Intervals
	1	**b2**	**b3**	**4**	**b5**	**6**	**b7**	Notes
Ionian #5	R	M2	M3	P4	Aug5	M6	M7	Intervals
	1	**2**	**3**	**4**	**#5**	**6**	**7**	Notes
Dorian #4	R	M2	m3	Aug4	P5	M6	m7	Intervals
	1	**2**	**b3**	**#4**	**5**	**6**	**b7**	Notes
Phrygian #3	R	m2	M3	P4	P5	m6	m7	Intervals
	1	**b2**	**3**	**4**	**5**	**b6**	**b7**	Notes
Lydian #2	R	Aug2	M3	Aug4	P5	M6	M7	Intervals
	1	**#2**	**3**	**#4**	**5**	**6**	**7**	Notes
Mixolydian #1 - Super Locrian	R	m2	m3	dim4	dim5	m6	dim7	Intervals
	1	**b2**	**b3**	**b4**	**b5**	**b6**	**bb7**	Notes

7DEOH +DUPRQLF PLQRU PRGHV LQWHUYDO VWUXFWXUH

0HORGLF 0LQRU 6FDOH †† +RZ DQG :K\ :DV ,W 'HULYHG IURP WKH +DUPRQLF 0LQRU 6FDOH

7KH +DUPRQLF PLQRU VFDOH DQG LWV PRGHV RSHQ XS WKH KDUPRQLF VSDFH EH\RQG WKH GLDWRQLF VFDOH .QRZLQJ WKRVH VFDOHV LV DQ LPSRUWDQW VWHS LQ EHLQJ DEOH WR LPSURYLVH RU FRPSRVH FKRUGV RU PHORGLHV LQ DQ\ VLWXDWLRQ DQG WKH\JLYH\RX D EURDGHU PRUH GHOLFDWH SDOHWWH IURP ZKLFK WR SDLQW %XW WKH\ DUH VWLOO QRW H[KDXVWLYH

7KH 0HORGLF PLQRU VFDOH LV WR WKH +DUPRQLF PLQRU VFDOH ZKDW WKH +DUPRQLF PLQRU VFDOH LV WR WKH 1DWXUDO PLQRU VFDOH ,W JRHV RQH VWHS IXUWKHU 7KH +DUPRQLF PLQRU VFDOH FDPH RXW RI WKH GHVLUH WR KDYH D FHUWDLQ NLQG RI UHVROXWLRQ EHWZHHQ WKH WK DQG WKH 5RRW DQG VR RQH RI WKH WRQHV WK WKH RI WKH PLQRU VFDOH ZDV UDLVHG WR PDNH LW PRUH OLNH WKH PDMRU VFDOH

7KH 0HORGLF PLQRU VFDOH FRPHV RXW RI D VLPLODU FRQFHUQ ††WKH +DUPRQLF PLQRU VFDOH GRHV D JRRG MRE RI JLYLQJ WKH URRW D NLQG RI PDJQHWLVP DQG WKHUH LV D VWURQJ UHVROXWLRQ IURP WKH WR WKH QH[W URRW EXW WKDW KDV ZKDW LV IRU VRPH SHRSOH DQ XQZDQWHG HIIHFW

7KH GLDWRQLF VWUXFWXUH ZDV VXFK WKDW WKHUH ZDV QHYHU PRUH WKDQ D IXOO VWHS EHWZHHQ DQ\WZR QRWHV RI DQ\RI WKH PRGHV EXW LQ WKH +DUPRQLF PLQRU PRGHV WKHUH LV D VWHS DQG D KDOIEHWZHHQ WZR RI WKH QRWHV WKH0LQRU DQG WKH0DMRU WK7KLV LV ZK\ WKH VFDOHV VRXQG VR H[RWLF ††RXU HDUV KHDU DQ XQHYHQ VSDFLQJ LQ WKH VWUXFWXUH RI WKH VFDOH LWVHOI

7KLV LV VRPHWLPHV D JRRG WKLQJ DV LQ ZKHQ \RX ZDQW WR VRXQG H[RWLF EXW VRPHWLPHV \RX GRQ¶W ZDQW WR VRXQG WKDW ZD\ DQG \RX VWLOO ZDQW WR SOD\ LQ D PLQRU NH\ ZKLOH KDYLQJ WKH UHVROXWLRQ WKDW WKH 0DMRU QRWH JLYHV \RX 2U PDNEH \RX MXVW ZDQW D VRXQG WKDW LV QRQ GLDWRQLF EXW WKDW LVQ¶W H[RWLF LQ WKH VDPH ZD\ WKDW WKH PRGHV RI WKH +DUPRQLF PLQRU VFDOH DUH 2U SHUKDSV \RX DUH LQ D VLWXDWLRQ ZKHUH QRQH RI WKH PRGHV RI WKH KDUPRQLF PLQRU RU GLDWRQLF VFDOHV ZLOO ILW ,Q DOO RI WKHVH FDVHV \RX DUH SUREDEO\ UHDFKLQJ IRU WKH 0HORGLF PLQRU VFDOH

7KH 0HORGLF PLQRU VFDOH LV SURGXFHG E\ WDNLQJ WKH +DUPRQLF PLQRU VFDOH DQG FRUUHFWLQJ WKH PLQRU QRWH VR WKDW WKHUH LV QR ORQJHU D WZR VWHS DQG KDOI JDS EHWZHHQ WKH PLQRU DQG WKH 0DMRU 6LQFH WKHUH LV RQO\ D KDOI VWHS JDS EHWZHHQ WKH DQG WKH WKLV LV SRVVLEOH LQ D ZD\ WKDW UHVXOWV LQ OLNH WKH GLDWRQLF PRGHV WKHUH EHLQJ QHYHU DQ\ PRUH WKDQ D IXOO VWHS EHWZHHQ DQ\ WZR QRWHV

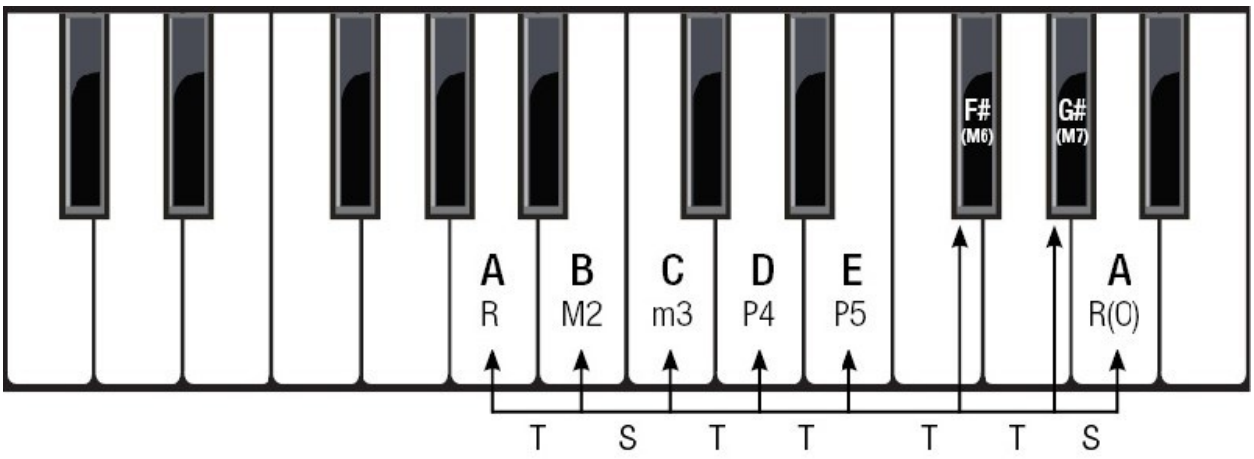
7KH QRWH RI WKH +DUPRQLF PLQRU VFDOH LV UDLVHG E\ D KDOI VWHS DQG D QHZ VFDOH LV ERUQ 7KH 0HORGLF PLQRU VFDOH

0HORGLF 0LQRU 6FDOH 6WUXFWXUH

7KH QRWHV RI WKH 0HORGLF PLQRU VFDOH DUH

5RRW D 0DMRU QG D PLQRU UG D 3HUIHFW WK D 3HUIHFW WK D 0DMRU WK DQG D 0DMRU WK $QG WKH VWUXFWXUH ORRNV OLNH WKLV

5 † 6 † 0 † 7 † P 5 † 6 † 0 † 7 † 0 † 7 † 3 † 7 † 3 † 7 †



)LJXUH 0HORGLF PLQRU VFDOH VWUXFWXUH LQ $

$V ZLWK WKH GLDWRQLF DQG KDUPRQLF PLQRU PRGHV WKLV VWUXFWXUH GHILQHV D VHULHV RI VFDOHV PRGHV HDFK ZLWK RQH RI WKH VHYHQ QRWHV DV WKH URRW 6RPH RI WKHVH VFDOHV DUH XVHG ZLGHO\ LQ MD]] DQG WKHLU VRXQG LV ZKLOH QRW DV H[RWLF DV WKH KDUPRQLF PLQRU PRGHV VWLOO TXLWH SURQRXQFHG

7KH 0RGHV RI WKH 0HORGLF 0LQRU 6FDOH :LWK $XGLR ([DPSOHV

7KHUH DUH PRGHV RI WKH PHORGLF PLQRU VFDOH 7KH\ DUH TXLWH VLPLODU WR WKH KDUPRQLF PLQRU PRGHV 7KHVH PRGHV DOVR FDQ KDYH GLIIHUHQW QDPHV WKH\ GRQ ׳W KDYH D VWDQGDUGL]HG QRPHQFODWXUH EXW WKH\ ׳UH SUHVHQWHG KHUH ZLWK WKH QDPHV
IURP WKH 'LDWRQLF PRGHV WKH\ ׳UH HVVHQWLDOO\ GHULYHG IURP

)RU GLDWRQLF PRGHV ZH XVHG & 0DMRU DV WKH 3DUHQW 0DMRU VFDOH WKH UHODWLYH PLQRU RI WKDW VFDOH $HROLDQ PRGH LV WKH $ QDWXUDO PLQRU VFDOH %RWK +DUPRQLF DQG 0HORGLF PLQRU VFDOHV DUH GHULYHG IURP WKH 1DWXUDO PLQRU VFDOH DQG WKDW ׳V
ZK\ DOO DXGLR H[DPSOHV IRU WKHVH VFDOHV DQG WKHLU PRGHV DUH LQ $

0HORGLF 0LQRU 0RGH † 'RULDQ

7KH ILUVW PRGH WKH UHJXODU PHORGLF PLQRU VFDOH KDV D

5RRW 0DMRU QG PLQRU UG 3HUIHFW WK 3HUIHFW WK 0DMRU WK 0DMRU WK
,Q $ LW KDV WKH IROORZLQJ QRWHV $ % & ' ( ) *

:K\ LV LW FDOOHG 'RULDQ " :KHQ \RX FRPSDUH LWV LQWHUYDO VWUXFWXUH WR WKH GLDWRQLF PRGHV \RX FDQ VHH WKDW GLDWRQLF 'RULDQ PRGH KDV WKH PRVW VLPLODU VWUXFWXUH

'LDWRQLF 'RULDQ † † E † † † † E

0HORGLF PLQRU PRGH † † E † † † †

6R DOO QRWHV DUH WKH VDPH KDYH WKH VDPH LQWHUYDO IXQFWLRQV H[FHSW WKDW PHORGLF
PLQRU PRGH KDV 0DMRU WK DQG GLDWRQLF GRULDQ KDV D PLQRU WK 7KDW ¶V ZK\ WKLV PRGH LV FDOOHG 'RULDQ † WKH WK QRWH LV VKDUSHQHG 6LQFH WKLV VFDOH RU PRGH LV XVHG TXLWH D ORW LQ MD]] LW LV DOVR VRPHWLPHV UHIHUUHG WR DV WKH -D]] PLQRU VFDOH RU MXVW VLPSO\ 0HORGLF PLQRU VFDOH

:H ZLOO SOD\ WKLV PRGH VFDOH LQ $ DQG MXVW OLNH ZLWK WKH +DUPRQLF PLQRU PRGHV ZH ZLOO XVH $ GURQH QRWH WR SOD\ RYHU LQ WKH LPSURYLVDWLRQ SDUW RI WKH DXGLR H[DPSOH :H DOUHDG\ KDYH WKH QRWHV RI WKH 0HORGLF PLQRU PRGH LQ $ VKRZQ DERYH

0HORGLF PLQRU PRGH †
'RULDQ DXGLR H[DPSOH LQ $! KWWS JRR JO 15)(S

0HORGLF 0LQRU 0RGH 3 †KU\JLDQ

7KH VHFRQG PRGH KDV D

5RRW PLQRU QG PLQRU UG 3HUIHFW WK 3HUIHFW WK 0DMRU WK PLQRU WK
,Q % LWV QRWHV DUH % & ' ( ) * $

7KH VWUXFWXUH IRU WKLV PRGH LV † E † E † † † † E

:KHQ \RX FRPSDUH WKLV VWUXFWXUH WR WKH 'LDWRQLF PRGHV \RX FDQ VHH WKDW WKH PRVW VLPLODU VWUXFWXUH LV WKDW RI WKH 3KU\JLDQ PRGH † E † E † † † E † E

6RWKH QG PRGH RIWKH 0HORGLF PLQRU VFDOH LV OLNH WKH 3KUJLDQ GLDWRQLF PRGH VWKH RQO\ GLIIHUHQFH EHLQJ WKDW LW KDV D 0DMRU LQWHUYDO RI D PLQRU 7KDW ZK\ WKLV PRGH LV FDOOHG 3KUJLDQ

7R GHPRQVWUDWH WKH VRXQG RI WKLV PRGH VLQFH ZH UH XVLQJ $ GURQH QRWH ZH OO XVH 0HORGLF PLQRU PRGH LQ $

$ 3KU\JLDQ QRWHV DUH $ %E & ' ( ) *

0HORGLF PLQRU PRGH †
3KU\JLDQ DXGLR H[DPSOH LQ $! KWWS JRR JO 36(

0HORGLF 0LQRU 0RGH † /\GLDQ

7KH WKLUG PRGH FRPSULVHV D

5RRW 0DMRU QG 0DMRU UG $XJPHQWHG WK $XJPHQWHG WK ZKLFK LV HQKDUPRQLFDOO\ HTXLYDOHQW WR D PLQRU WK 0DMRU WK 0DMRU WK

,Q & LWV QRWHV DUH & ' ( ) * $ %

,W KDV † † † † VDPH DV E † †

'LDWRQLF /\GLDQ KDV WKH PRVW VLPLODU VWUXFWXUH WR WKLV EXW LQ WKLV FDVH WKH LV VKDUSHQHG WKDW ‐V ZK\ WKLV PRGH LV FDOOHG /\GLDQ ,Q WKLV VDPH PDQQHU WU\ WR ILJXUH RXW WKH QDPHV IRU WKH UHVW RI WKH PHORGLF PLQRU PRGHV

,Q $ WKH QRWHV RI WKLV PRGH DUH $ % & ' (VDPH DV)) *

7KHVH DUH WKH QRWHV ZH ‐OO EH XVLQJ LQ RXU DXGLR H[DPSOH

0HORGLF PLQRU PRGH †
/\GLDQ DXGLR H[DPSOH LQ $! KWWS JRR JO L/ 6<5

0HORGLF 0LQRU 0RGH 0 †L[RO\GLDQ

7KH IRXUWK PRGH KDV D

5RRW 0DMRU QG 0DMRU UG $XJPHQWHG WK 3HUIHFW WK 0DMRU WK PLQRU WK

,WV QRWHV LQ ' DUH ' ( ) * $ % &

,Q $ 0L[RO\GLDQ FRQWDLQV WKH QRWHV $ % & ' ( ) *

0HORGLF PLQRU PRGH †
0L[RO\GLDQ DXGLR H[DPSOH LQ $! KWWS JRRJO[N+L=

0HORGLF 0LQRU 0RGH † $HROLDQ

7KH ILIWK PRGH FRQVLVWV RI D

5RRW 0DMRU QG 0DMRU UG 3HUIHFW WK 3HUIHFW WK PLQRU WK PLQRU WK
,Q (LWV QRWHV DUH ( ) * $ % &

,Q $ WKH QRWHV RI WKH RI WKLV PRGH DUH $ % & ' ( ) *

0HORGLF PLQRU PRGH †
$HROLDQ DXGLR H[DPSOH LQ $! KWWS JRRJO 1R6D

0HORGLF 0LQRU 0RGH † /RFULDQ

7KH VL[WK PRGH KDV D

5RRW 0DMRU QG PLQRU UG 3HUIHFW WK GLPLQLVKHG WK PLQRU WK DQG D PLQRU WK
,Q) LWV QRWHV DUH) * $ % & ' (

,Q $ WKH QRWHV RI WKLV PRGH DUH $ % & ' (E) *

0HORGLF PLQRU PRGH †
/RFULDQ DXGLR H[DPSOH LQ $! KWWS JRRJO NK<D 8

0HORGLF 0LQRU 0RGH † ,RQLDQ 7 †KH $OWHUHG 6FDOH

)LQDOO\ WKH VHYHQWK PRGH DV XVXDO WKH PRVW FRPSOLFDWHG RQH KDV D

5RRW PLQRU QG PLQRU UG GLPLQLVKHG WK HQKDUPRQLFDOO\ HTXLYDOHQW WR D 0DMRU
GLPLQLVKHG WK RU 7ULWRQH PLQRU WK PLQRU WK
,Q * LWV QRWHV DUH * $ % & ' ( )

)LUVW RI DOO WKH VWUXFWXUH RI WKLV PRGH LV † E † E † E VDPH DV † E † E † E :KHQ \RX FRPSDUH WKLV VWUXFWXUH DJDLQVW WKH GLDWRQLF PRGHV \RX FDQ VHH WKDW LW LV PRVW VLPLODU WR WKH /RFULDQ PRGH ZKLFK KDV WKH 3HUIHFW † E † E † † E † E † E :H FDQ WHFKQLFDOO\ FDOO WKLV PRGH ♭P /RFULDQ E ♮ EXW WKHUH DUH VRPH RWKHU RSWLRQV DV ZLWK WKH PRGH RI WKH +DUPRQLF PLQRU WKHUH DUH D FRXSOH RI ZD\V WR QDPH WKLV PRGH

)LUVW WKLV PRGH FDQ EH FDOOHG 6XSHU/RFULDQ EXW LW LV D OLWWOH ELW DPELJXRXV QDPH HVSHFLDOO\ EHFDXVH ZH ♮YH DOUHDG\ XVHG LW WR QDPH WKH +00 ZKLFK KDV EE DQG 000 KDV D E 7KDW LV WKH RQO\ GLIIHUHQFH †† RQH QRWH D VHPLWRQH DSDUW EXW VWLOO D VLJQLILFDQW GLIIHUHQFH 6R 6XSHU /RFULDQ LV QRW D JRRG QDPH IRU WKLV PRGH EXW WKHUH LV RQH QDPH E\ZKLFK LW LV ZHOO NQRZQ 7KH $OWHUHG 6FDOH

7KH $OWHUHG VFDOH DV WKH QDPH VXJJHVWV LV D VFDOH ZKLFK KDV DOO RI WKH QRWHV RI WKH UHJXODU 0DMRU VFDOH EXW DOWHUHG E\ RQH VHPLWRQH

0DMRU VFDOH † † † † † †

$OWHUHG VFDOH 000 † E † E † E † E † E † E

6XSHU /RFULDQ +00 † E † E † E † E † E † EE

6R XVXDOO\ZKHQ VRPHRQH WDONV DERXW WKH $OWHUHG VFDOH WKH\DUH UHIHUULQJ WR WKH
WKPRGH RI WKH 0HORGLF PLQRU VFDOH +DYH WKDW LQ PLQG

7KLV VFDOH FDQ DOVR EH FDOOHG ,RQLDQ DQG WKH UHDVRQ LV WKH VDPH DV ZK\ WKH +00 FDQ EH FDOOHG 0L[R\GLDQ

,RQLDQ PRGH VWUXFWXUH VDPH DV 0DMRU VFDOH LV † † † † † †

0HORGLF PLQRU VFDOH VWUXFWXUH LV † E † E † E † E † E † E

%XW VLQFH ZH ♮UH QRW WDONLQJ DERXW VSHFLILF QRWHV ZH FDQ DOVR VKRZ WKH ,RQLDQ
PRGH VWUXFWXUH OLNH WKLV E † E † E † E † E † E † E 7KLV LV VWLOO WKH ,RQLDQ PRGH EHFDXVH WKH LQWHUYDOOLF UHODWLRQVKLSV EHWZHHQ WKHVH QRWHV UHPDLQHG WKH
VDPH †† ZH ♮YH SXW D ♭P E ♮ QH[W WR DOO RI WKH QRWHV $QG VLQFH WKH 000 VWUXFWXUH KDV ♮ ♭P LQWHUYDO RI ♭P E ♮ RU LQ RWKHU ZRUGV WKH QRWH LV VKDUSHQHG ZH FDQ FDOO WKLV PRGH ,RQLDQ

7KLV VFDOH OLNH WKH PRGH RI KDUPRQLF PLQRU LV XVHIXO LQ VLWXDWLRQV WKDW FDOO IRU DQ DOWHUHG VFDOH ,Q PRVW RWKHU VLWXDWLRQV KRZHYHU LW LV QRW XVHG

,Q $ WKH QRWHV RI WKLV VFDOH DUH $ %E & 'E (E) *

0HORGLF PLQRU PRGH †
7KH $OWHUHG 6FDOH DXGLR H[DPSOH LQ $! KWWS JRRJOTTTFMX

0HORGLF 0LQRU 6FDOH &RPSDULVRQ &KDUWV

MODES	NOTES	1 R	2 m2	3 M2	4 m3	5 M3	6 P4	7 Tritone	8 P5	9 m6	10 M6	11 m7	12 M7	Octave
	1st mode Dorian #7 (Melodic minor scale)	A		B	C		D		E		F#		G#	A
	2nd mode Phrygian #6	B	C		D		E		F#		G#	A		B
	3rd mode Lydian #5	C		D		E		F#		G#	A		B	C
	4th mode Mixolydian #4	D		E		F#		G#	A		B	C		D
	5th mode Aeolian #3	E		F#		G#	A		B	C		D		E
	6th mode Locrian #2	F#		G#	A		B	C		D		E		F#
	7th mode Ionian #1	G#	A		B	C		D		E		F#		G#

7DEOH 0HORGLF PLQRU PRGHV LQ $

Dorian #7 — Melodic minor scale	R	M2	m3	P4	P5	M6	M7	Intervals
	1	**2**	**b3**	**4**	**5**	**6**	**7**	Notes
Phrygian #6	R	m2	m3	P4	P5	M6	m7	Intervals
	1	**b2**	**b3**	**4**	**5**	**6**	**b7**	Notes
Lydian #5	R	M2	M3	Aug4	Aug5	M6	M7	Intervals
	1	**2**	**3**	**#4**	**#5**	**6**	**7**	Notes
Mixolydian #4	R	M2	M3	Aug4	P5	M6	m7	Intervals
	1	**2**	**3**	**#4**	**5**	**6**	**b7**	Notes
Aeolian #3	R	M2	M3	P4	P5	m6	m7	Intervals
	1	**2**	**3**	**4**	**5**	**b6**	**b7**	Notes
Locrian #2	R	M2	m3	P4	dim5	m6	m7	Intervals
	1	**2**	**b3**	**4**	**b5**	**b6**	**b7**	Notes
Ionian #1 — The Altered scale	R	m2	m3	dim4	dim5	m6	m7	Intervals
	1	**b2**	**b3**	**b4**	**b5**	**b6**	**b7**	Notes

7DEOH 0HORGLF PLQRU PRGHV LQWHUYDO VWUXFWXUH

6FDOH 2YHUYLHZ 6 ††FDOH &RPSDULVRQ &KDUW

+HUH DUH WKH VFDOHV WKDW ZH ¶YH ORRNHG WKXV IDU 7KHVH FKDUWV ZLOO PDNH LW HDVLHU WR
VHH WKH VLPLODULWLHV EHWZHHQ VFDOHV DQG KRZ HYHU\WKLQJ LV GHULYHG IURP WKH 0DMRU VFDOH ZKLFK DJDLQ LV MXVW RQH QRWH FXWWLQJ RI WKH &KURPDWLF VFDOH

	NOTES	1 R	2 m2	3 M2	4 m3	5 M3	6 P4	7 Tritone	8 P5	9 m6	10 M6	11 m7	12 M7	Octave
SCALES	Chromatic	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C
	Natural Major	C		D		E	F		G		A		B	C
	Major Pentatonic	C		D		E			G		A			C
	Natural Minor (6^{th} mode of the Major Scale)	A		B	C		D		E	F		G		A
	Minor pentatonic	A			C		D		E			G		A
	Harmonic minor	A		B	C		D		E	F			G#	A
	Melodic minor	A		B	C		D		E		F#		G#	A

7DEOH 6FDOH FRPSDULVRQ FKDUW

Major scale	**1**	T	**2**	T	**3**	S	**4**	T	**5**	T	**6**	T	**7**	S	Octave
Natural minor scale	**1**	T	**2**	S	**b3**	T	**4**	T	**5**	S	**b6**	T	**b7**	T	O
Harmonic minor scale	**1**	T	**2**	S	**b3**	T	**4**	T	**5**	S	**b6**	TS	**7**	S	O
Melodic minor scale	**1**	T	**2**	S	**b3**	T	**4**	T	**5**	T	**6**	T	**7**	S	O
Minor Pentatonic scale	**1**		TS		**b3**	T	**4**	T	**5**		TS		**b7**	TS	O
Natural minor scale	**1**	T	**2**	S	**b3**	T	**4**	T	**5**	S	**b6**	T	**b7**	T	O
Major Pentatonic scale	**1**	T	**2**	T	**3**		TS		**5**	T	**6**		TS		O
Major scale	**1**	T	**2**	T	**3**	S	**4**	T	**5**	T	**6**	T	**7**	S	O

7DEOH 6FDOH FRPSDULVRQ FKDUW

7DEOH LV TXLWH LPSRUWDQW WR UHPHPEHU EHFDXVH LW VXPPDUL]HV WKH VFDOHV ZH ¶YH OHDUQHG DERXW VR IDU DQG VKRZV KRZ WKH\ DUH UHODWHG WR RQH DQRWKHU WKH\ DUH GLIIHUHQW \HW TXLWH VLPLODU

1RWLFH KRZ ERWK PLQRU DQG PDMRU SHQWDWRQLF DUH MXVW WKH FXWRXWV RI WKH QDWXUDO
PLQRU DQG PDMRU VFDOH %XW HYHQ VR WKH\ VWLOO VRXQG GLIIHUHQW EHFDXVH WKH LQWHUYDOV DUH GLIIHUHQW HVSHFLDOO\ EHFDXVH RI WKDW ODUJHU 7 6 LQWHUYDO DQG
LQWHUYDOV DUH ZKDW PXVLF LV PDGH XS IURP

6WXG\ WKLV FKDUW QRWLFH WKH GLIIHUHQFHV DQDO\]H LW DQG WU\ WR PHPRUL]H LW LW ZLOO
VHUYH \RX DORW

.H\V DQG .H\ 6LJQDWXUHV

6R IDU LQ WKLV ERRN ZH ·YH PHQWLRQHG NH\V LQ VHYHUDO LQVWDQFHV EXW OHW ·V H[SODLQ
PRUH FORVHO\ ZKDW LW PHDQV ZKHQ ZH VD\ WKDW VRPHWKLQJ LV LQ VRPH NH\

,Q YLUWXDOO\ DOO FDVHV QHDUO\ ZLWKRXW H[FHSWLRQ D SLHFH RI PXVLF LV RUJDQL]HG DFFRUGLQJ WR VRPH VFDOH †† XVXDOO\ WKH PDMRU RU PLQRU VFDOH †† ZLWK D URRW QRWH DV LWV FHQWHU RU ΔWRQLF 7 ÷KLV LV FDOOHG WKH NH\ RI WKH SLHFH DQG LW WDNHV WKH IRUP
PRVW RIWHQ RI D QRWH IROORZHG E\ WKH ZRUG ΔPDMRU ÷ RU ΔPLQRU ÷ IRU LQVWDQFH Δ' PDMRU ÷ RU Δ%E PLQRU 6 ÷LQFH WKHUH DUH QRWHV WKDW PHDQ WKDW ZH KDYH SRVVLEOH NH\V DW RXU GLVSRVDO

$ NH\ LV OLNH D KDUPRQLF FHQWHU RI D PXVLFDO SLHFH .QRZLQJ WKH NH\ RI D VRQJ JLYHV D PXVLFLDQ D ORW RI LQIRUPDWLRQ VLQFH LW WHOOV \RX ZKDW VFDOH WKH VRQJ LV RUJDQL]HG DURXQG ,Q WKH FDVH RI PRVW URFN SRS EOXHV DQG FRXQWU\ PXVLF NQRZLQJ WKH NH\ RI WKH VRQJ LV HQRXJK WR WHOO DQ LPSURYLVRU ZKDW QRWHV ZLOO VRXQG JRRG RYHU WKH FKRUG FKDQJHV RI WKDW VRQJ

,Q WKH FDVH RI MD]] LW LV RIWHQ PRUH FRPSOLFDWHG WKDQ WKDW VLQFH D VRQJ LQ RQH NH\ PD\ PRYH WKURXJK YDULRXV WRQDO RU KDUPRQLF FHQWHUV DV WKH VRQJ SURJUHVVHV WKXV UHTXLULQJ GLIIHUHQW VFDOHV WR EH SOD\HG ,Q JHQHUDO KRZHYHU WKH NH\ RI D VRQJ JLYHV D PXVLFLDQ WKH PRVW EDVLF DQG LPSRUWDQW LQIRUPDWLRQ DERXW LWV
KDUPRQLF IUDPHZRUN

:KHQ ZH ZULWH WKH NH\ RI D VRQJ ZH LQGLFDWH WKH VFDOH WKDW WKH VRQJ LV RUJDQL]HG DURXQG $ NH\ DOVR WHOOV XV KRZ PDQ\ VKDUSHG RU IODWWHG QRWHV DUH FRQWDLQHG LQ WKDW VFDOH IRU H[DPSOH & PDMRU FRQWDLQV QR VKDUSV RU IODWV EXW ' PDMRU FRQWDLQV WZR VKDUSV) DQG & 7KLV LV FDOOHG D NH\ VLJQDWXUH

.H\ VLJQDWXUH LV VLPSO\ D PHDVXUH RI VKDUSV RU IODWV LQ D NH\ (DFK GLVWLQFW VFDOH KDV LWV RZQ NH\ VLJQDWXUH DQG HDFK NH\ VLJQDWXUH FDQ HLWKHU LQGLFDWH D PDMRU NH\ VXFK DV & PDMRU RU D PLQRU NH\ WKDW VKDUHV WKH VDPH VFDOH DV ZH VKRXOG NQRZ E\ QRZ WKLV LV FDOOHG D UHODWLYH PLQRU NH\ 7KH NH\ VLJQDWXUH LV XVHG LQ WKH PXVLF QRWDWLRQ V\VWHP DW WKH EHJLQQLQJ RI WKH VWDII WR LQGLFDWH WKH NH\ RI WKH SLHFH DQG WKDW ¹V ZK\ LW LV YHU\ XVHIXO FRQFHSW IRU PXVLFLDQV ZKR XVH WUDGLWLRQDO PXVLFDO QRWDWLRQ

+RZ WR 8QGHUVWDQG &LUFOH RI)LIWKV DQG &LUFOH RI)RXUWKV

:KHQ \RX WDNH D PXVLF WKHRU\ FRXUVH RU \RX EHJLQ WDNLQJ SULYDWH OHVVRQV RQH RI WKH YHU\ ILUVW WKLQJV \RX ZLOO UHFHLYH LV D GLDJUDP RI D FLUFOH ZLWK ORWV RI QRWHV DURXQG LW ,W LV IRU PRVW SHRSOH FRQIXVLQJ DQG IRU YLUWXDOO\ DOO SHRSOH XQXVDEOH
XQWLO WKH\ OHDUQ ZKDW LW UHDOO\ LV DQG ZKDW LW PHDQV

7KDW FLUFOH LV WKH FLUFOH RI ILIWKV 7KHUH LV D ORW WR VD\ DERXW WKH FLUFOH RI ILIWKV EXW LQ JHQHUDO LW LV D YLVXDO WRRO †† D ZD\ RI DUUDQJLQJ QRWHV LQ LQWHUYDOV RI SHUIHFW ILIWKV

7KLV LV XVHIXO IRU PDQ\ UHDVRQV ,W GHVFULEHV WKH UHODWLRQVKLSV EHWZHHQ DOO RI WKH SRVVLEOH QRWHV \RX FDQ SOD\ LQ D YHU\ SDUWLFXODU ZD\ ,W DOORZV XV WR EHWWHU XQGHUVWDQG FKRUG SURJUHVVLRQV PRUH RQ WKLV ODWHU DV ZHOO DV WKH GLVWDQFH
EHWZHHQ DQ\ JLYHQ NH\V ,W DOVR OLVWV VRPH IHDWXUHV RI HDFK NH\ WKDW DUH XVHIXO ZKHQ XQGHUVWDQGLQJ WKH LQWHUQDO VWUXFWXUH RI WKRVH NH\V

7KH PRVW LPSRUWDQW RI DOO LV WKDW FLUFOH RI ILIWKV JLYHV XV DQ HDV\ ZD\ WR UHPHPEHU KRZ PDQ\ VKDUSV RU IODWV DUH LQ HDFK GLDWRQLF NH\ DQG UHPHPEHU LQ GLDWRQLF NH\V WKHUH DUH HLWKHU VKDUSV RU IODWV EXW QHYHU ERWK

%HJLQQLQJ ZLWK & PDMRU UHODWLYH $ PLQRU ZKLFK KDV QR VKDUSV RU IODWV RU Δ DFFLGHQWDOV ÷ DV WKH\ DUH FDOOHG LW LV SRVVLEOH WR PRYH XS RU GRZQ E\ DQ LQWHUYDO RI ILIWK WR GHWHUPLQH ZKDW RWKHU NH\V ZLOO ORRN OLNH DQG ZKDW LWV NH\
VLJQDWXUH ZLOO EH

6R D FLUFOH RI ILWKV VLPSO\ VKRZV DOO NH\V DUUDQJHG LQ ILWKV VWDUWLQJ IURP & DW WKH WRS EHFDXVH WKH NH\ RI & PDMRU KDV QR DFFLGHQWDOV LQ LW

$ ILIWK XS IURP & LV * DQG WKH FLUFOH FRQWLQXHV * †† XS D ILIWK †† ' †† XS D ILIWK †† $ †† XS D ILIWK †† (†† XS D ILIWK †† % †† XS D ILIWK ††)

0RYLQJ XS WKH FLUFOH LQ WKLV ZD\ GGGV RQH QRWH ZLWK D ³P´ LQ WKH NH\ RI * WZR VKDUSV LQ WKH NH\ RI ' WKUHH VKDUSV LQ WKH NH\ RI $ HWF

) VKDUS VLWV RQ WKH ERWWRP RI WKH FLUFOH ³R FORFN :H FRXOG JR RQ DVFHQGLQJ IURP) WR & * ' $) & DQG FORVH WKH FLUFOH EXW ZH XVXDOO\ VWDUW IURP & DW WKH WRS DQG WKHQ HLWKHU JR OHIW GHVFHQGLQJ RU ULJKW DVFHQGLQJ

6WDUWLQJ IURP & DJDLQ ZH FDQ GHVFHQG WKH FLUFOH E\ PRYLQJ FRXQWHU FORFNZLVH LQ ILIWKV WKLV WLPH XVLQJ OODWV

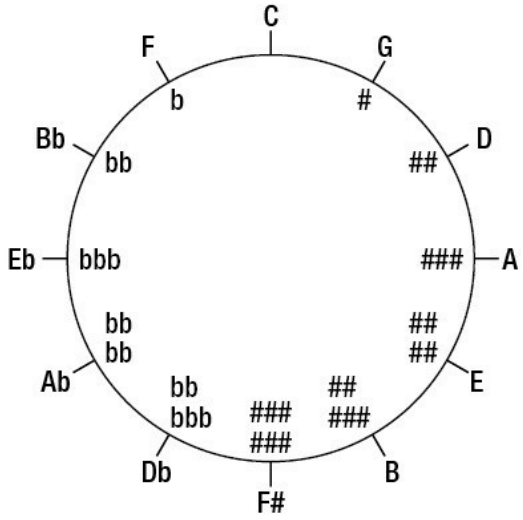
& †† GRZQ D ILIWK †† (†† GRZQ D ILIWK †† %E †† GRZQ D ILIWK †† (E †† GRZQ D ILIWK †† $E †† GRZQ D ILIWK †† 'E †† GRZQ D ILIWK †† *E VDPH DV) †† GRZQ D ILIWK †† &E RU % ††)E RU (†† GRZQ D ILIWK †† $ DQG VR RQ DOO WKH ZD\ GRZQ WR &

127(,W LV LMPRUWDQW WR FODUL\ KHUH VRPHWKLQJ WKDW FRQIXVHV D ORW RI SHRSOH 6LQFH ZH ³UH GHVFHQGLQJ RQ WKH FLUFOH RI ILWKV WKH QRWHV DUH EHFRPLQJ ORZHU LQ SLWFK E\ DSHUIHFW ILIWK LQWHUYDO 7KLV PHDQV WKDW LI \RX PRYH FRXQWHU FORFNZLVH DQG WKH QRWHV DUH GHVFHQGLQJ LQ SLWFK \RX ³UH VWLOO PRYLQJ E\ DQ LQWHUYDO RI SHUIHFW ILIWK +RZHYHU LI \RX PRYH FRXQWHU FORFNZLVH RQ WKH FLUFOH RI ILWKV DQG WKH QRWHV DUH DVFHQGLQJ LQ SLWFK WKHQ WKDW LV FRQVLGHUHG
DV WKH FLUFOH RI IRXUWKV †† D PLUURU UHIOHFWLRQ RI WKH FLUFOH RI ILWKV 6RPH PXVLFLDQV SUHIHU WR WKLQN LQ WHUPV RI WKH FLUFOH RI IRXUWKV EHFDXVH FKRUG SURJUHVVLRQV WHQG WR PRYH PRUH RIWHQ LQ WKLV ZD\ ,Q DQ\FDVH KHUH LV WKH FLUFOH RI IRXUWKV VHTXHQFH

& †† XS D IRXUWK †† (†† XS D IRXUWK †† %E †† XS D IRXUWK †† (E †† XS D IRXUWK †† $E HWF

6R D GHVFHQGLQJ ILIWK LV OLNH DQ DVFHQGLQJ IRXUWK RQO\ RQH RFWDYH DSDUW <RX FDQ HDVLO\ YHULI\ WKLV E\ ORRNLQJ DW WKH QRWH FLUFOH VKRZQ RQ)LJXUH ,I \RX UHPHPEHU WKH SHUIHFW ILIWK LQWHUYDO LV VHPLWRQHV DQG WKH SHUIHFW IRXUWK LV VHPLWRQHV XS RU GRZQ IURP WKH VWDUWLQJ QRWH $OO \RX KDYH WR GR LV WR FRXQW WKH VHPLWRQHV XS RU GRZQ IURP DQ\ VWDUWLQJ QRWH ,I FRXUDJH \RX WR FKHFN WKLV IRU \RXUVHOI

&RPLQJ EDFN WR WKH FLUFOH RI ILWKV PRYLQJ FRXQWHU FORFNZLVH DGGV RQH QRWH ZLWK D E LQ WKH NH\ RI) WZR IODW QRWHV LQ WKH NH\ RI %E WKUHH IODWV LQ WKH NH\ RI (E DQG VR RQ



)LJXUH &LUFOH RI ILIWKV DW LWV EDVLF IRUP
6RPHWLPHV WKH UHODWLYH PLQRU NH\V DUH DGGHG EHQHDWK HDFK PDMRU NH\ $ PLQRU IRU & (PLQRU IRU * % PLQRU IRU ') PLQRU IRU $ DQG VR RQ

7KLV VSHFLDO UHODWLRQVKLS EHWZHHQ QRWHV E\ DQ LQWHUYDO RI ΔILIWK ÷ LV LQ PDQ\ ZD\V WKH IRXQGDWLRQ RI KDUPRQLF PRYHPHQW %\ OLVWLQJ WKH QRWHV LQ DVFHQGLQJ RU GHVFHQGLQJ ILIWKV D F\FOH LV SURGXFHG LQ ZKLFK DOO RI WKH QRWHV DUH UHSUHVHQWHG

7KDW F\FOH GHSLFWHG DV D FLUFOH KHOSV WR WHOO XV WKLQJV DERXW HDFK RI WKRVH QRWHV
ZKHQ WKH\ DUH XVHG WR FUHDWH NH\V VXFK DV IRU LQVWDQFH ZKDW WKH VWUXFWXUH RI
WKRVH NH\V LV 8VXDOO\ WKLV LV XQGHUVWRRG LQ WHUPV RI PDMRU DQG PLQRU VFDOHV DQG D UHODWLRQVKLS LV HVWDEOLVKHG EHWZHHQ UHODWLYH PDMRU DQG PLQRU NH\V

:KDW ·V PRVW LPSRUWDQW LV WKDW DUUDQJLQJ WKH NH\V LQ ILIWKV PDNHV LW HDV\ WR VHH
KRZ NH\V UHODWH WR RQH DQRWKHU

:KHQ LW FRPHV WR UHDGLQJ DQG SHUIRUPLQJ VLJKWUHDGLQJ ZULWWHQ PXVLF LW LV YHU\ LPSRUWDQW WR XQGHUVWDQG KRZ WKHVH FRQFHSWV VXFK DV NH\ VLJQDWXUHV DQG WKH
FLUFOH RI ILIWKV ZRUN LQ WKHRU\ DQG LQ SUDFWLFH)RU DQ LQ GHSWK ORRN DW WKLV FKHFN RXW P\ +RZ WR 5HDG 0XVLF IRU %HJLQQHUV ERRN

3DUW

0DVWHU WKH &KRUGV

:KDW LV D &KRUG"

6RPH LQVWUXPHQWV DUH VLQJOH QRWH LQVWUXPHQWV FDSDEOH RI RQO\ SOD\LQJ RQH QRWH DW D WLPH 2WKHU LQVWUXPHQWV KRZHYHU OLNH JXLWDUV DQG SLDQRV DUH FDSDEOH RI
SOD\LQJ FKRUGV

$ FKRUG DW LWV PRVW EDVLF LV VLPSO\ D PXVLF XQLW FRQVLVWLQJ RI PRUH WKDQ RQH QRWH EHLQJ SOD\HG DW WKH VDPH WLPH ,Q RWKHU ZRUGV LW LV WKH VRXQG ZH JHW ZKHQ ZH FRPELQH DQ\WZR RU PRUH QRWHV DQG SOD\ WKHP DW WKH VDPH WLPH

&KRUGV FRPH IURP VFDOHV ,Q IDFW WKH\ DUH PDGH XS IURP QRWHV LQ D VFDOH (DFK VFDOH LPSOLHV D FHUWDLQ OLVW RI FKRUGV RQFH \RX KDYH D VFDOH LQ PLQG LW LV HDV\ WR SURGXFH FKRUGV WKDW DUH FRQWDLQHG LQ WKDW VFDOH :H ¶OO JHW WR WKLV VRRQ

&KRUGV DUH OLNH VFDOHV GHILQHG E\ D VHW RI LQWHUYDOV UHODWLYH WR WKH URRW QRWH 7KLV
LV KRZ FKRUGV DUH QDPHG †† WKH QDPH RI D FKRUG WHOOV XV ZKDW NLQG RI QRWHV LW FRQWDLQV LW WHOOV XV ZKDW LV WKH URRW QRWH FRXOG EH DQ\ RI WKH QRWHV DQG IURP ZKLFK LQWHUYDOV WKDW FKRUG LV PDGH RI 7KH LQWHUYDOOLF VWUXFWXUH RI D FKRUG †† WKH
ZD\ WKH QRWHV LQ WKH FKRUG UHODWH EDFN WR LWV URRW QRWH †† LV FDOOHG WKH Δ VSHOOLQJ ÷
RI WKDW FKRUG DQG LI \RX NQRZ WKH QDPH RI WKH FKRUG WKHQ \RX NQRZ EHFDXVH RI LWV VSHOOLQJ WKH QRWHV WKDW DUH FRQWDLQHG LQ LW

,I ZH KDYH D 0DMRU WK FKRUG IRU LQVWDQFH WKHQ E\ WKH HQG RI WKLV FKDSWHU \RX ZLOO OHDUQ KRZ LW FRQVLVWV RI VRPH 5RRW D 0DMRU UG D 3HUIHFW WK DQG D 0DMRU WK QRWH DOO UHODWLYH WR WKH URRW 7KLV LV WKH VSHOOLQJ RI D 0DMRU WK FKRUG ,I ZH DVVLJQ WKLV FKRUG D VSHFLILF URRW QRWH IRU H[DPSOH*QRWH WKHQ WKH QDPH RI WKLV FKRUG ZRXOG EH *0DMRU WK DQG LI ZH WKHQ ORRN DW WKH*PDMRU VFDOH ZH ZRXOG NQRZ WKDW WKH RWKHU QRWHV LQ WKH FKRUG EHFDXVH RI LWV VSHOOLQJ DUH * 5 % 0
' 3) 0

,W LV SRVVLEOH VLPSO\ E\ QDPLQJ WKH LQWHUYDOV FRQWDLQHG LQ WKH FKRUG WR FUHDWH
KLJKO\ FRPSOH[FKRUGV VXFK DV D 0DMRU IODW FKRUG 7KHVH FKRUGV DUH PRVW RIWHQ XVHG LQ MD]] DQG WKH\ FUHDWH VRSKLVWLFDWHG KDUPRQLF VSDFHV 7KHLU XVH LV
KLJKO\ VSHFLDOL]HG ZLWK FHUWDLQ FKRUGV RQO\ EHLQJ SODYHG LQ YHU\ VSHFLILF
VLWXDWLRQV

+RZ &KRUGV $UH %XLOW

7UDGLWLRQDOO\ FKRUGV DUH EXLOW IURP LQWHUYDOV RI WKLUGV ,Q RWKHU ZRUGV WKH\ FRQVLVW RI D URRW QRWH DQG DQRWKHU QRWH RU VHULHV RI QRWHV DERYH WKDW URRW WKDW
DVFHQG LQ WKLUGV 7R DFKLHYH VXFK D VWUXFWXUH DOO WKDW LV UHTXLUHG LV WR WDNH D
VFDOH
DQG FRXQW XS IURP D URRW QRWH E\ D WKLUG ZKLFK PHDQV XS WZR GHJUHHV LQ WKH
VFDOH WR JHW D FKRUG QRWH DQG WKHQ IRU HDFK QHZ QRWH LQ WKH FKRUG FRXQW XS E\
DQRWKHU WKLUG WR WKH ILIWK WKH VHYHQWK DQG VR RQ

6LPLODUO\ WR VFDOHV FKRUGV FDQ EH GHVFULEHG E\ WKHLU FKRUG IRUPXODV 6LQFH FKRUGV DUH PDGH XS IURP QRWHV RI WKH VFDOH WKH\ FRPH IURP WKHLU IRUPXOD VLPSO\
VKRZV WKH VFDOH GHJUHHV WKDW WKDW FKRUG XVHV IURP LWV VFDOH ,I ZH KDYH D ♭ Δ
FKRUG IRUPXOD IRU H[DPSOH ZKLFK LV WKH IRUPXOD IRU D 0DMRU[WK] FKRUG LW VLPSO\
PHDQV WKDW WKLV FKRUG FRQVLVWV RI WKH 5RRW ILIWK VFDOH[UG] GHJUHH[WK] DQG
VFDOH GHJUHH ,I ZH WDNH D 0DMRU VFDOH DQG DVVLJQ LWV D NH\ OHW ¶V VD\ WKH & ZH
FDQ VLPSO\ DSSO\ WKLV IRUPXOD WR JHW WKH QRWHV RI WKH &0DM[WK] FKRUG

7KLV LV ZK\ & PDMRU[WK] FKRUG FRQVLVWV RI WKH QRWHV & 5RRW ♯♯ JLYHV WKH FKRUG
LWV QDPH (0DMRU[UG] * 3HUIHFW[WK] DQG % 0DMRU[WK] &KRUG IRUPXODV DQG
FKRUG VSHOOLQJ DUH YHU\ VLPLODU DQG XVHIXO FRQFHSWV WKDW JLYH XV D ZD\ RI
DQDO\]LQJ WKH FKRUGV :H ¶OO H[SORUH WKLV D ORW PRUH LQ IXUWKHU VHFWLRQV

,W LV SRVVLEOH DQG QRW XQFRPPRQ WR DOWHU FKRUGV WKDW KDYH EHHQ EXLOW E\
VWDFNLQJ
WKLUGV ♯♯ E\ PRYLQJ RQH RU PRUH RI WKH QRWHV XS RU GRZQ E\ LQYHUWLQJ WKH
FKRUGV UHDUUDQJLQJ WKHLU QRWHV VR WKDW D QHZ FKRUG LV SURGXFHG RU E\ DGGLQJ D

QRWH IURP WKH VFDOH \RX ·UH ZRUNLQJ ZLWK WR D SUHH[LVWLQJ FKRUG ,W LV DOVR SRVVLEOH WR FUHDWH FKRUGV E\ VWDFNLQJ LQWHUYDOV RWKHU WKDQ WKLUGV ·· IRU LQVWDQFH

IRXUWKV RU ILIWKV DOWKRXJK WKLV LV IDU OHVV FRPPRQ *HQHUDOO\ VSHDNLQJ KRZHYHU FKRUGV DUH JHQHUDWHG LQ WKH ZD\ ZH KDYH GHVFULEHG †† E\ VWDFNLQJ WKLUGV DERYH D URRW QRWH DFFRUGLQJ WR D SDUWLFXODU VFDOH

&KRUG 7\SHV '\DGV 7ULDGV 4XDGDGV DQG &KRUG 4XDOLWLHV

$ FKRUG LV DQ\ VRXQG SURGXFHG E\ PRUH WKDQ RQH QRWH 7KDW PHDQV WKDW DQ\ WLPH WZR RU PRUH QRWHV DUH SURGXFHG DW WKH VDPH WLPH D FKRUG LV IRUPHG :H FDWHJRUL]H FKRUGV DFFRUGLQJ WR KRZ PDQ\ QRWHV DUH FRQWDLQHG LQ WKHP DQG WKRXJK LW LV SRVVLEOH WR WDON DERXW FKRUGV FRQWDLQLQJ YHU\ PDQ\ QRWHV XS WR WZHOYH WKH XVXDO IRUPXODWLRQV FRQWDLQ WZR WKUHH RU IRXU QRWHV ,Q MD]] DQG VRPH FODVVLFDO FKRUGV ZLWK PRUH WKDQ IRXU QRWHV RFFXU ZLWK VRPH IUHTXHQF\ EXW LQ JHQHUDO WKH\ DUH FRQVLGHUHG H[WHQVLRQV RI WKUHH RU IRXU QRWH FKRUGV

0RVW RIWHQ FKRUGV FRQVLVW RI RU GLVWLQFW QRWHV DOWKRXJK PDQ\ WLPHV ZKHQ ZH SOD\ D FKRUG VRPH RI WKHVH QRWHV DUH UHSHDWHG LQ YDULRXV RFWDYHV UHVXOWLQJ LQ
PRUH WKDQ RU WRQHV FRPSRVLQJ WKH FKRUG 7KLV LV REYLRXV IRU H[DPSOH LI \RX SOD\ D EDVLF FKRUG RQ JXLWDU PRVW EHJLQQHUV ILUVW OHDUQ VXFK DV (PLQRU DQG WKHQ DQDO\]H ZKLFK QRWHV \RX MXVW SOD\HG †† HYHQ WKRXJK \RX SOD\HG DOO VL[VWULQJV ZKLFK PHDQV VL[QRWHV WKHUH DUH RQO\ GLVWLQFW QRWHV LQ WKLV FKRUG VRPH RI ZKLFK DUH UHSHDWHG RQ FHUWDLQ VWULQJV WR JHW D IXOOHU VRXQGLQJ FKRUG

7KH PRVW FRPPRQ FKRUGV FRQVLVW RI VLPSOH QRWH FKRUGV FDOOHG WULDGV ,Q PRUH FRPSOH[KDUPRQLHV PRVW FKRUGV FRQWDLQ DW OHDVW QRWHV LQ JHQHUDO WKHVH DUH
FDOOHG WKH FHUWDLQ FKRUGV RU TXDGDGV

0RVW FRPPRQ FKRUG W\SHV DUH FDWHJRUL]HG DV IROORZV

\DGV †† WKHVH DUH FKRUGV FRQWDLQLQJ DQ\ WZR QRWHV

7ULDGV †† WKHVH DUH FKRUGV FRQWDLQLQJ WKUHH GLVWLQFW QRWHV

4XDGDGV †† WKHVH DUH FKRUGV FRQWDLQLQJ IRXU GLVWLQFW QRWHV

,Q WKH FDVH RI WULDGV ZKLFK DUH PRVW XVHG FKRUG W\SHV LQ URFN SRS DQG RWKHU JHQUHV DQG TXDGDGV LW LV XVXDOO\ WKH FDVH WKDW WKH FKRUGV DUH EXLOW RI VWDFNHG
WKLUGV DV SUHYLRXVO\ GLVFXVVHG

,Q WKH FDVH RI G\DGV KRZHYHU DQ\ LQWHUYDO FDQ EH XVHG ,Q IDFW DQ\ &KURPDWLF LQWHUYDO VHH 7DEOH LV DOVR D G\DG FKRUG VR WKH\ FDQ EH DQ\ NLQG RI PDMRU PLQRU SHUIHFW DXJPHQWHG RU GLPLQLVKHG G\DGV 7KH PRVW FRPPRQ G\DGV LQ URFN DUH G\DGV SURGXFHG E\ SOD\LQJ WZR QRWHV D WK DSDUW 5 ++ RRW DQG WKH 3HUIHFW WK VRPHWLPHV IROORZHG E\ DQRWKHU 5RRW ++ DQ 2FWDYH RQ WRS 7KHVH DUH XVXDOO\ FDOOHG 3 ΔRZHU FKRUGV ÷ DQG DUH FRPPRQO\ XVHG E\ JXLWDULVWV LQ URFN DQG PHWDO JHQUHV

,W LV SRVVLEOH WR SOD\ D FKRUG FRQVLVWLQJ RI RQO\ QRWHV DQG HYHQ RI RQO\ WRQHV DQG DOVR RI PRUH WKDQ QRWHV ,W LV QRW XQFRPPRQ IRU D MD]] PXVLFLDQ WR SOD\ FKRUGV FRQVLVWLQJ RI RU GLIIHUHQW QRWHV DQG SLDQR SOD\HUV KDYH WKH DELOLW\ WR SOD\ DV PDQ\ DV GLVWLQFW QRWHV DW RQH WLPH ,Q PRVW FDVHV WKLV LV DYRLGHG EHFDXVH WKH PRUH GLVWLQFW QRWHV DUH DGGHG WR D FKRUG WKH PRUH WKH\ ZLOO FODVK ZLWK HDFK RWKHU DQG WKH FKRUG ZLOO VRXQG PRUH DQG PRUH GLVVRQDQW 0RVW SRS VRQJV KDYH YHU\ VLPSOH KDUPRQ\ FRQVLVWLQJ RI VLPSOH FKRUGV ZLWK YHU\ IHZ QRWHV ZKHUHDV MD]] RQ WKH RWKHU VSHFWUXP LV XVXDOO\ YHU\ DGYDQFHG KDUPRQ\ ZLWK PRUH FRPSOH[FKRUGV

8QGHUVWDQGLQJ &KRUG 4XDOLWLHV

,QJHQHUDO DQG SDUWLFXODUO\ZKHQ WDONLQJ DERXW WULDGV DQG TXDGDGV FKRUGV KDYH GLIIHUHQW IODYRUV WKDW FKDUDFWHUL]H WKHP 7KHVH IODYRUV DUH XVXDOO\ FDOOHG FKRUG
TXDOLWLHV DQG WKH\ PDNH WKH FKRUGV VRXQG GLIIHUHQW QRW LQ WKH WHUPV RI WKH KLJKHU RU ORZHU SLWFK EXW LQ WHUPV RI WKH PRRG RU WKH HIIHFW WKH\ SURGXFH

)RU H[DPSOH WKH PRVW FRPPRQ FKRUG TXDOLWLHV DUH PDMRU DQG PLQRU DQG WKH GLIIHUHQFH EHWZHHQ WKHP LV HDV\ WR QRWLFH PDMRU FKRUGV DUH KDSS\ VRXQGLQJ ZKLOH PLQRU FKRUGV DUH VDG VRXQGLQJ (0DMRU VRXQGV TXLWH GLIIHUHQW WKDQ (PLQRU QRW LQ WKH VDPH ZD\ DV (0DMRU ZRXOG VRXQG GLIIHUHQW IURP) 0DMRU ZKHUH FKRUG TXDOLW\ LV WKH VDPH EXW SLWFK RI WKH URRW QRWH LV GLIIHUHQW E\ RQH VHPLWRQH

7KH ▫P TXDOLW\ ▫ WKDW D FKRUG ZLOO KDYH HQWLUHO\ GHSHQGV RQ WKH LQWHUYDO VWUXFWXUH
VSHOOLQJ RI WKDW FKRUG DQG HDFK FKRUG DV ZH VDLG KDV D XQLTXH VHW RI LQWHUYDOV DQG D IRUPXOD WKDW GHVFULEHV KRZ LW UHODWHV WR LWV VFDOH ,Q WKH QH[W IHZ VHFWLRQV
ZH ▫OO JR RYHU HDFK FKRUG TXDOLW\ IRU WULDGV DQG TXDGDGV 1RWH WKDW ZKHQ ZH VD\ ▫P FKRUG TXDOLW\ ▫ ZH RIWHQ H[FOXGH ▫P TXDOLW\ ▫ DQG VLPSO\ UHIHU WR LW DV D ▫P FKRUG ++▫

WKLVMXVWPHDQVWKDWZHKDYHQ"WDVVLJQHGDQ\RIWKH QRWHVWRWKHFKRUG\HW

%\WKH HQG RI WKLV FKDSWHU\RX ZLOO KDYH D KXJH OLEUDU\ RI FKRUGV DW\RXU GLVSRVDO DQG PRUH WKDQ VROLG FKRUG IRXQGDWLRQ DQG LW ZLOO EH HDV\WR UHPHPEHU WKHP DOO ZLWK WKH WULFNV, ¶OO VKRZ\RX

7ULDG &KRUGV

:H ¶OO VWDUW ZLWK QRWH FKRUGV ILUVW EHFDXVH WKH\ DUH WKH VLPSOHVW DQG HDVLHVW WR XQGHUVWDQG 7KH\ ¶UH WKH PRVW FRPPRQ FKRUGV WRGD\ ,W LV ZRUWK UHSHDWLQJ WKDW JHQHUDOO\ ZKHQ ZH WDON DERXW WULDGV ZH DUH WDONLQJ DERXW WKRVH WULDGV WKDW DUH FRPSRVHG RI WZR UGV XVXDOO\ HLWKHU PDMRU RU PLQRU LQWHUYDO VWDFNHG RQ WRS RI RQH DQRWKHU RU WKDW DUH VLPSOH PRGLILFDWLRQV RI WKRVH WUGV WULDGV

7ULDG FKRUGV DUH DVIROORZV

0DMRU WULDGV ‡ WKHVH FKRUGV FRQVLVW RI D 5RRW D 0DMRU DQG D 3HUIHFW 7KLV PHDQV WKDW WKH\ DUH FRPSRVHG RI D URRW D PDMRU DERYH WKDW URRW DQG D PLQRU DERYH WKDW 1RWLFH KHUH WKDW WKH GLVWDQFH IURP D 0DMRU WR D 3HUIHFW LV VHPLWRQHV ‡ ZKLFK LV D PLQRU LQWHUYDO

7KH FKRUG IRUPXOD IRU D PDMRU WULDG LV

,Q & WKH & PDMRU WULDG ZRXOG EH &(*

0LQRU WULDGV ‡ WKHVH DUH FRPSRVHG RI D PLQRU LQWHUYDO DQG D PDMRU LQWHUYDO VWDFNHG RQ WRS RI WKDW WKH LQYHUVH RI WKH FRPSRVLWLRQ RI PDMRU WULDGV

7KDW PHDQV WKDW WKH\ FRQVLVW RI D 5RRW D PLQRU DQG D 3HUIHFW

$V IRU WKH PLQRU WULDG FKRUG IRUPXOD ‡ ILUVW ZH KDYH D URRW ‡ WKHQ ZH KDYH PLQRU LQWHUYDO RI D PDMRU 7KHVH WZR LQWHUYDOV DUH RQH VHPLWRQH DSDUW WKDW PHDQV LQ RUGHU WR JHW WKH PLQRU ZH MXVW KDYH WR IODWWHQ WKH PDMRU QRWH E\ D VHPLWRQH VR ZH VLPSO\ ZULWH E $QG WKHQ ZH KDYH D SHUIHFW DV XVXDO $QG RQFH WKDW WKH GLVWDQFH EHWZHHQ WKH PLQRU DQG SHUIHFW LV ZKLFK LV D PDMRU LQWHUYDO

6R D PLQRU WULDG FKRUG IRUPXOD LV VLPSO\ E DQG IURP RXU & PDMRU FKRUG FRQVLVWLQJ RI QRWHV &(* ZH ZRXOG JHW & PLQRU ZLWK WKH QRWHV &(E*

<RX FDQ VHH KHUH KRZ RQO\ RQH QRWH GLIIHUHQFH DV OLWWOH DV RQH VHPLWRQH DSDUW
FKDQJHV WKH PRRG RI WKH FKRUG GUDPDWLFDOO\ ,W JRHV IURP KDSS\ VRXQGLQJ PDMRU WR VDG VRXQGLQJ PLQRU :H FDQ FRQFOXGH WKDW UG LQ D FKRUG LV D YHU\ LPSRUWDQW QRWH WKDW PDNHV D KXJH GLIIHUHQFH WR LWV VRXQG

:KHQ LW FRPHV WR WULDGV WKHUH DUH DOVR

$XJPHQWHG WULDGV †† WKHVH DUH PDMRU WULDGV ZLWK D VKDUS 7KDW PHDQV WKH\ DUH EXLOW IURP WZR PDMRU WKLUGV VWDFNHG RQ WRS RI RQH DQRWKHU DQG FRQWDLQ WKH QRWHV 5RRW 0DMRU $XJPHQWHG VDPH DV PLQRU 7KHLU VRXQG LV MDUULQJ VRPHWLPHV D JRRG WKLQJ DQG WKHVH DUH UDUHO\ SODYHG

7KH DXJPHQWHG WULDG FKRUG IRUPXOD LV

WHOOV WKDW ZH VLPSO\ KDYH WR UDLVH WKH SHUIHFW QRWH E\ RQH VHPLWRQH

$V IRU WKH QRWHV & $XJPHQWHG RU MXVW &DXJ ZRXOG EH & (*

'LPLQLVKHG WULDGV †† WKHVH DUH PLQRU WULDGV ZLWK D IODW 7ULWRQH 7KH\ DUH FRPSRVHG RI WZR PLQRU WKLUGV VWDFNHG RQ RQH DQRWKHU ZKLFK PHDQV WKH\ FRQVLVW RI D 5RRW D PLQRU DQG D GLPLQLVKHG

7KH GLPLQLVKHG FKRUG IRUPXOD LV E E ZKLFK WHOOV WKDW ZH KDYH WR IODWWHQ ERWK DQG QRWH RI WKH SDUHQW VFDOH

7KH & GLPLQLVKHG FKRUG RU MXVW &GLP ZRXOG WKHQ EH & (E*E

$OO RI WKHVH IRXU EDVLF WULDGV DUH FRPSRVHG RI WZR LQWHUYDOV †† PDMRU DQG PLQRU UGV †† VWDFNHG RQ WRS RI RQH DQRWKHU LQ YDULRXV SHUPXWDWLRQV

6XVSHQGHG &KRUGV

,W LV FRPPRQ KRZHYHU WR DOWHU WKRVH WULDGV VOLJKWO\ DQG DUULYH DW FKRUGV WKDW DUH GHULYHG IURP VWDFNHG EXW WKDW FRQWDLQ RWKHU LQWHUYDOV 7KLV LV GRQH E\ WKH VHFRQG QRWH LQ WKRVH WULDGV †† WKH ZKHWKHU LW'V D PDMRU RU D PLQRU

7KHVH QHZ FKRUGV DUH FDOOHG 6XVSHQVLRQV DQG WKHUH DUH WZR W\SHV RI WKHP)LUVW WKHUH DUH VXVSHQGHG FKRUGV LQ ZKLFK WKH LV ORZHUHG WR D 7KHVH DUH FDOOHG 6XVSHQGHG FKRUGV RU MXVW VXV

6XVSHQGHG QG WULDGV †† ,I\RX EHJLQ ZLWK D PDMRU RU PLQRU WULDG DQG ORZHU WKH UG WR D PDMRU QG WKHQ \RX ZLOO KDYH D VXV WULDG ,W FRQVLVWV RI D 5RRW D 0DMRU QG DQG D 3HUIHFW WK DQG LW LV EXLOW IURP D SHUIHFW WK VWDFNHG RQ WRS RI D PDMRU QG LQWHUYDO

7KH FKRUG IRUPXOD IRU D VXV FKRUG LV

7KLV PHDQV WKDW WKH QRWHV RI &VXV FKRUG ZRXOG EH &'* ZH MXVW WDNH WKH QG QRWH LQ WKH VFDOH RI WKH IURP WKH &PDMRU VFDOH

6XVSHQGHG WK WULDGV 7 †† KH VHFRQG NLQG RI VXVSHQGHG WULDG LV RQH LQ ZKLFK WKH UG LV UDLVHG WR D WK UDWKHU WKDQ ORZHUHG QG WR D 7KHVH DUH FDOOHG 6XVSHQGHG FKRUGV DQG DUH FRPPRQO\ XVHG LQ MD]] DV ZHOO DV LQ URFN DQG SRS WR DGG VSHFLILF FRORU WR PDMRU DQG PLQRU WULDG SURJUHVVLRQV WKDW LV QHLWKHU PDMRU QRU PLQRU

%HJLQQLQJ ZLWK D PDMRU RU PLQRU WULDG 6XV ¬V DUH GHULYHG E\ UDLVLQJ WKH VHFRQG QRWH LQ WKH FKRUG PDMRU RU PLQRU UG XS WR D SHUIHFW WK ,W LV EXLOW IURP D PDMRU QG LQWHUYDO VWDFNHG RQ WRS RI D SHUIHFW WK WKH RSSRVLWH RI VXV DQG LW LV FRPSRVHG RI D 5RRW D 3HUIHFW WK DQG D 3HUIHFW WK

7KH FKRUG IRUPXOD IRU D VXV FKRUG LV

7KH QRWHV RI &VXV FKRUG ZRXOG EH &)*

7KLV FRQFOXGHV DOO IRUPV RI WULDG FKRUGV $OPRVW

,W LV DOVR SRVVLEOH WR WDON DERXW VXVSHQVLRQV RI GLPLQLVKHG DQG DXJPHQWHG FKRUGV †† DOWKRXJK WKHVH DUH YHU\ UDUHO\ XVHG ,Q WKHVH FDVHV WKH VXVSHQGHG FKRUGV KDYH WKH VDPH TXDOLWLHV DV EHIRUH RQO\ WKH ILIWK LV HLWKHU ODWWHG LQ WKH
FDVH RI D VXVSHQVLRQ RI D GLPLQLVKHG FKRUG RU VKDUSHG LQ WKH FDVH RI D
VXVSHQVLRQ RI DQ DXJPHQWHG FKRUG

7KHVH FKRUGV DUH VKRZQ LQ WKH IROORZLQJ ZD\

GLPVXV E

GLPVXV E

DXJVXV

DXJVXV

2XW RI WKH MH FKRUGV WKH GLPVXV LV H[WUHPHO\ GLVRQDQW EHFDXVH WKHUH LV RQO\ D KDOI VWHS GLIIHUHQFH EHWZHHQ WKH 3HUIHFW DQG GLPLQLVKHG

7DNH D ORRN DW WKLV WDEOH IRU D FOHDU RYHUYLHZ RI DOO WKH FKRUGV VR IDU

Chords	Formulas			Notes in C
Major	1	3	5	C E G
Minor	1	b3	5	C Eb G
Augmented	1	3	#5	C E G#
Diminished	1	b3	b5	C Eb Gb
Suspended 2nd	1	2	5	C D G
Suspended 4th	1	4	5	C F G
Augsus 2	1	2	#5	C D G#
Dimsus 2	1	2	b5	C D Gb
Augsus 4	1	4	#5	C F G#
Dimsus 4	1	4	b5	C F Gb

7DEOH 7ULDG FKRUGV

Chords	Notes											
	R	m2	M2	m3	M3	P4	dim5	P5	Aug5	M6	m7	M7
Major	R				M3			P5				
Minor	R			m3				P5				
Augmented	R				M3				Aug5			
Diminished	R			m3			dim5					
Suspended 2nd	R		M2					P5				
Suspended 4th	R					P4		P5				
Augsus 2	R		M2						Aug5			
Dimsus 2	R		M2				dim5					
Augsus 4	R					P4			Aug5			
Dimsus 4	R					P4	dim5					

7DEOH 7ULDG FKRUGV LQ WHUYDO VWUXFWXUH

7KLV FRQFOXGHV DOO FKRUG WULDGV 7KH\ DUH WKH PRVW EDVLF FKRUGV RI WKH KDUPRQ\ EXLOW LQ WKLUGV † FDOOHG 7HUWLDQ KDUPRQ\ † ZKLFK YDVW PDMRULW\ RI FKRUGV WKDW
ZH KHDU WRGD\ DUH EDVHG RQ 7KH\ DUH QRW KDUG WR OHDUQ DQG VKRXOG EH
PHPRUL]HG 7KHUH DUH DOVR WKH[W DQG[G LQYHUVLRQV IRU HDFK RI WKHVH WULDG FKRUGV EXW ZH KDYH \HW WR JR RYHU WKH LQYHUVLRQV

WK &KRUGV 4XDGGV

0RUH FRPSOLFDWHG WKDQ WULDGV EHFDXVH RI DQ H[WUD QRWH QRWH FKRUGV RU
TXDGGV FDQ EH H[SODLQHG VLPSO\ DV H[WHQGHG WULDGV E\ DQRWKHU †† XVXDOO\ WKH WK RI VRPHNLQG 7KDW \HV ZK\ WKH\ \HUH RIWHQ FDOOHG FKRUGV $OVR FKRUGV JHQHUDOO\ FRQWDLQ GLVWLQFW QRWHV KHQFH ZK\ WKH\ \HUH FRQVLGHUHG DV TXDGGV

4XDGGV DUH EXLOW LQ PRUH GLIIHUHQW ZD\V WKDQ WULDGV VLQFH WKHUH LV DQ H[WUD QRWH
ZKLFK PHDQV WKHUH DUH PRUH SRVVLEOH FRPELQDWLRQV ,Q JHQHUDO KRZHYHU WKH\

DUH DOO GLIIHUHQW YHUVLRQV RI WKH FKRUGV ZKLFK FRQVLVW RI D 5RRW D D DQG D

4XDGDG KDUPRQ\ KDV PRUH WKLQJV JRLQJ RQ ++ PRUH QRWHV FODVKLQJ ZLWK HDFK RWKHU LW LV WKHUHIRUH PRUH FRPSOH[DQG VRSKLVWLFDWHG 4XDGDGV DUH XVHG ZLGHO\ DFURVV DOO JHQUHV EXW HVSHFLDOO\ LQ EOXHV DQG MD]]

WKFKRUGV DUH DVIROORZV

0DMRU † WKHVH FKRUGV KDYH D PDMRU LQWHUYDO IROORZHG E\ D PLQRU ZKLFK LV IROORZHG E\ DQRWKHU PDMRU RQ WRS 7KLV PHDQV WKDW WKH\ KDYH D 5RRW 0DMRU UG 3HUIHFW WK DQG D 0DMRU WK ZH ¶YH DOUHDG\ VHHQ WKLV RQH DW WKH EHJLQQLQJ RI WKLV FKDSWHU

&KRUG IRUPXOD LV

,Q & WKH QRWHV RI & 0DMRU FKRUG RU MXVW &0DM RU HYHQ &0 ZRXOG EH & (* %

0LQRU † WKHVH FKRUGV DUH FRPSRVHG RI D PLQRU LROORZHG E\ D PDMRU IROORZHG E\ DQRWKHU PLQRU 6R WKH\ KDYH WKH IROORZLQJ QRWHV 5RRW PLQRU UG 3HUIHFW WK DQG D PLQRU WK

&KRUG IRUPXOD LV E E

,Q & & PLQRU RU &P ZRXOG EH & (E * %E

'RPLQDQW † WKHVH FKRUGV DUH OLNH LQ WKH PLGGOH EHWZHHQ WKH SUHYLRXV WZR 7KH\ KDYH D 5RRW 0DMRU UG 3HUIHFW WK DQG D PLQRU WK 6R PDMRU LV IROORZHG E\ WZR PLQRU UG LQWHUYDOV (YHQ WKRXJK WKH\ DUH YHU\ VLPLODU WR 0DMRU DQG PLQRU WK FKRUGV WKH\ VRXQG GLIIHUHQW RIWHQ DGGLQJ WHQVLRQ ZKLFK WHQGV WR UHVROYH LQ D FKRUG SURJUHVVLRQ

&KRUG IRUPXOD LV E

&GRPLQDQW RU MXVW & DV LW ¶V XVXDOO\ ZULWWHQ KDV WKH QRWHV &(*%E

0LQRU E † WKLV QDPH PD\ VHHP VFDU\ EXW LW ¶V DFWXDOO\ MXVW D PLQRU FKRUG ZLWK DQ ODWW ,W LV FRPSRVHG RI D 5RRW PLQRU GLPLQLVKHG 7ULWRQH DQG D PLQRU 7KLV PHDQV WKDW WKH\ KDYH D PLQRU LQWHUYDO IROORZHG E\ DQRWKHU PLQRU ZKLFK LV IROORZHG E\ D PDMRU WKH RSSRVLWH RI 'RPLQDQW 7KHVH

DUH YHU\ XQLTXH VRXQGLQJ FKRUGV FRPPRQO\ XVHG LQ MD]] VRPHWLPHV LQ EOXHV EXW QRW DV PXFK LQ SRS URFN DQG VLPLODU VW\OHV

&KRUG IRUPXOD LV E E E

& PLQRU E RU &P E KDV WKH QRWHV & (E *E %E

'LPLQLVKHG † DOVR FDOOHG)XOO 'LPLQLVKHG WKHVH FKRUGV JR RQH VWHS IXUWKHU 7KH\ DUH FRPSRVHG RQO\ RI VWDFNHG PLQRU[UG] LQWHUYDOV ZKLFK LV ZK\ WKH\ DUH FDOOHG V\PPHWULFDO FKRUGV 7KHLU LQWHUYDO VWUXFWXUH LV DOZD\V WKH VDPH QR PDWWHU LI \RX ·IUH DVFHQGLQJ RU GHVFHQGLQJ LQ SLWFK ,Q SUDFWLFH WKLV PHDQV WKDW

\RX FDQ PRYH WKHVH FKRUGV XS RU GRZQ E\ D PLQRU[UG] LQWHUYDO VHPLWRQHV DV PXFK DV \RX ZDQW DQG WKH QRWHV ZRXOG UHPDLQ WKH VDPH RQO\ LQ GLIIHUHQW RUGHU (DFK QRWH LQ WKLV ZD\ FDQ DFW DV D URRW QRWH 7KLV LV RIWHQ XVHG LQ SOD\LQJ WR JHW D FRRO VRXQGLQJ VHTXHQFH DQG MD]] SOD\HUV LQ SDUWLFXODU OLNH WR H[SORLW WKLV LGHD $Q\ NLQG RI FKRUGV WKDW KDYH WKH VDPH LQWHUYDOV DFURVV DOO WKHLU QRWHV DUH V\PPHWULFDO $XJPHQWHG WULDGV IRU LQVWDQFH PDGH XS RI WZR VWDFNHG PDMRU[UG] LQWHUYDOV DUH DOVR V\PPHWULFDO FKRUGV

7KH VRXQG RI GLPLQLVKHG FKRUGV LV MDUULQJ GDUN DQG XQVWDEOH EXW DOVR LQWHUHVWLQJ DQG RIWHQ XVHG FDUHIXOO\ IRU GUDPDWLF HIIHFW 'LPLQLVKHG FKRUGV VKRXOG QRW EH PLVWDNHQ ZLWK GLPLQLVKHG WULDGV ZKLFK DUH MXVW FDOOHG

·P GLPLQLVKHG 7 ·IKH\FRQVLVWRI D 5RRW PLQRU[UG] GLPLQLVKHG[WK] DQG 0DMRU[WK]

&KRUG IRUPXOD LV E E EE

127(EE LV D GRXEOH IODWWHG WK ZKLFK PHDQV WKDW LW LV WKH VDPH DV WKH WK VFDOH GHJUHH LQ SUDFWLFH

& GLPLQLVKHG RU &GLP IRU VKRUW KDV WKH QRWHV & (E *E $

0DMRU † WKHVH FKRUGV KDYH D FRRO GLVWLQFWLYH VRXQG DQG DUH XVHG FRPPRQO\ LQ MD]] DQG RFFDVLRQDOO\ LQ VRPH RWKHU VW\OHV 7KH\ FDQ EH XVHG WR VSLFH XS D [UHIXQDU PDMRU WULDG RU DV D VXEVWLWXWH IRU D[WK] 0DMRU[WK] ZKLFK FDQ VRPHWLPHV FODVK ZLWK WKH PHORG\ LI LW ·V SOD\LQJ WKH URRW QRWH † EHFDXVH WKH[WK] QRWH LQ D 0DMRU[WK] FKRUG LV RQO\ D VHPLWRQH DSDUW IURP WKH URRW 7KHLU XVH LV VSHFLDOL]HG DQG LW LV

LPSRUWDQW WR H[SHULPHQW DQG WUXVW \RXU HDUV RQ ZKHQ LW VRXQGV JRRG WR XVH WKHP

7KH\ FRQVLVW RI D PDMRU[UG] IROORZHG E\ D PLQRU[UG] DQG WKHQ D PDMRU[WK] LQWHUYDO ZKLFK LV VHPLWRQHV 7KH\ KDYH WKH QRWHV 5RRW 0DMRU[UG] 3HUIHFW[WK] 0DMRU[WK]

&KRUG IRUPXOD LV

& 0DMRU RU MXVW & ZRXOG EH & (* $

0LQRU † ILQDOO\ PLQRU[WK] TXDGDGV DUH WKH VDPH 0DM[WK]RU H[FHSW ZLWK D PLQRU [UG]7KH\ KDYH D PLQRU [UG]LQWHUYDO IROORZHG E\ D PDMRU[UG] ZKLFK LV WKHQ IROORZHG E\ D PDMRU [QG] LQWHUYDO 7KH\ FRQWDLQ WKH QRWHV 5RRW [UG]PLQRU 3HUIHFW [WK]6DMRU [WK]

&KRUG IRUPXOD LV E

& PLQRU RU &P ZRXOG EH & (E * $

Chords	Formulas				Notes in C
Major 7	1	3	5	7	C E G B
Dominant 7	1	3	5	b7	C E G Bb
minor 7	1	b3	5	b7	C Eb G Bb
minor 7b5	1	b3	b5	b7	C Eb Gb Bb
diminished 7	1	b3	b5	bb7	C Eb Gb A
Major 6	1	3	5	6	C E G A
minor 6	1	b3	5	6	C Eb G A

7DEOH 4XDGDG FKRUGV

Chords	Notes											
	R	m2	M2	m3	M3	P4	dim5	P5	m6	M6	m7	M7
Major 7	R				M3			P5				M7
Dominant 7	R				M3			P5			m7	
minor7	R			m3				P5			m7	
minor 7b5	R			m3			dim5				m7	
diminished 7	R			m3						M6		
Major 6	R				M3			P5		M6		
minor 6	R			m3				P5		M6		

7DEOH 4XDGGDFKRUGVLQWHUYDOVWUXFWXUH

7KLV FRQFOXGHV WKH PDLQ TXDGGDFKRUGV 7KHVH RI FRXUVH DUH QRW DOO SRVVLEOH FRPELQDWLRQV RI LQWHUYDOV WKDW TXDGGDFV FDQ FRQVLVW RI WKHUH DUH TXLWH D IHZ PRUH

\RX FDQ PDNH IRU LQVWDQFH 'RPLQDQW FKRUG ZLWK D IODW[WK E E 7KHVH PD\RU PD\QRW VRXQG JRRG LQ GLIIHUHQW VLWXDWLRQV VR DOZD\V XVH \RXU HDU DV D JXLGH DQG UHPHPEHU WKH JROGHQ UXOH Δ,I LW VRXQGV JRRG LW LV JRRG ÷

)XQGDPHQWDO &KRUG 4XDOLWLHV

$V ZH ªYH VHHQ WKHUH DUH YHU\ PDQ\ GLIIHUHQW FKRUG TXDOLWLHV EXW WKHUH LV DQ HDV\ ZD\ WR FDWHJRUL]H WKHP DOO DFFRUGLQJ WR WKHLU VRXQG DQG IXQFWLRQ LQ D FKRUG SURJUHVVLRQ 7KLV DOVR JRHV IRU H[WHQGHG DQG DOWHUHG FKRUGV ZH ªUH JRLQJ WR ORRN DW DIWHU WKLV VHFWLRQ

,Q HVVHQFH WKHUH DUH WKUHH IXQGDPHQWDO FKRUG TXDOLWLHV WKDW DOO RWKHU FKRUG
TXDOLWLHV IDOO LQWR 7KHUH DUH

0DMRU FKRUGV

0LQRU FKRUGV

'RPLQDQW FKRUGV

+HUH ĐDUH VRPH UXOHV DQG JXLGHOLQHV WR NQRZ ZKLFK IDPLO\ D FKRUG EHORQJV WR

- ,I D FKRUG KDV D 0DMRU UG DQG D 0DMRU WK WKHQ LW LV GHILQLWHO\ LQ WKH 0DMRU IDPLO\ 7KHVH FKRUGV DUH JHQHUDOO\ KDSS\ VRXQGLQJ DQG JHQHUDOO\ VSHDNLQJ WKH LIXQFWLRQ LV WR SURYLGH VWDELOLW\ LQ D PDMRU NH\ DQG JLYH FRQWH[W IRU PHORGLF GLUHFWLRQ LQ D FKRUG SURJUHVVLRQ
- ,I D FKRUG KDV D PLQRU UG QRWH LQ LW WKHQ LW LV FRQVLGHUHG WR EH D SDUW RI WKH PLQRU IDPLO\ 7KHVH FKRUGV DUH JHQHUDOO\ VDG VRXQGLQJ WKH RSSRVLWH RI 0DMRU DQG WKHLU IXQFWLRQ JHQHUDOO\ VSHDNLQJ LV DOVR WR SURYLGH VWDELOLW\ EXW LQ D PLQRU NH\
- ,I D FKRUG KDV D 0DMRU UG DORQJ ZLWK D PLQRU WK WKHQ LW LV GHILQLWHO\ LQ WKH GRPLQDQW IDPLO\ 'RPLQDQW FKRUGV DUH XVXDOO\ XVHG DV TXDGGDFV †† WKH\ DUH PDMRU WULDGV ZLWK WKH DGGLWLRQ RI D PLQRU WK 7KHVH FKRUGV DUH XVHG LQ DOO EOXHV DQG PDQ\ RWKHU JHQUHV †† WKH\ FUHDWH D ORW RI WHQVLRQ ZKLFK WHQGV WR EH UHVROYHG LQ D FKRUG SURJUHVVLRQ

)URP WKHVH WKUHH EDVLF FKRUGV DOO RWKHU FKRUGV FDQ EH DVVHPEOHG %\ DOWHULQJ QRWHV
RI WKRVH FKRUGV RU DGGLQJ QRWHV WR WKHP XVXDOO\ LQ WKH IRUP RI ΔH[WHQVLRQV ††ǵ WKLUGV VWDFNHG RQ WRS RI WKH FKRUGV DQG WKHQ E\ VXEWUDFWLQJ RWKHU QRWHV DZD\
IURP WKH UHVXOWLQJ FKRUGV LW LV SRVVLEOH WR JHQHUDWH HYHU\ RWKHU FKRUG WKDW FDQ EH
XVHG)RU DOO WKHVH UHDVRQV PDQ\ PXVLFLDQV HYHQ LQ MD]] FRQVLGHU HYHU\ FKRUG D PHPEHU RI HLWKHU WKH PDMRU PLQRU RU GRPLQDQW IDPLO\

7KH &RPSOH[LW\ RI ([WHQGHG FKRUGV ǿV ǿV DQG ǿV

&KRUGV JURZ DQG HYROYH EH\RQG DQ RFWDYH DQG ZKHQ WKH\ GR VR † ZKHQ WKH\ FRQWDLQ D QRWH ZKLFK LV D WKLUG XS IURP WKH DQG WKHUHIRUH KLJKHU WKDQ WKH RFWDYH † WKH\ DUH XVXDOO\ FDOOHG H[WHQGHG FKRUGV 7KHVH FKRUGV DUH VHHQ DV VLPSOH H[WHQVLRQV RI WULDGV DQG TXDGGDGV ZLWK TXDGGDGV EHLQJ WKH H[WHQVLRQV RI WULDGV DQG VLQFH WKHVH DUH JHQHUDOO\ EXLOW LQ WKLUGV WKH EDVLF H[WHQVLRQV RI WKH ǿV

WKFKRUGV DUH GLIIHUHQW YDULDWLRQV RI WKH

WKFKRUGV RU ǿV ǿV ZLWK DVWDFNHG WKLUG

WKFKRUGV RU ǿV ǿV ZLWK DQRWKHU VWDFNHG WKLUG

WKFKRUGV RU ǿV ǿV ZLWK DQRWKHU VWDFNHG WKLUG

1	2	3	4	5	6	7	1	2	3	4	5	6	7

:KHQ H[WHQGLQJ FKRUGV ZH HLUVW ORRN DW WKH VFDOH DQG H[WHQG LWV QRWHV EH\RQG WKH RFWDYH :H FDQ VLPSO\ ZULWH WKLV DV

7KH RFWDYH LV WKH HLJKW QRWH LQ D QRWH VFDOH 6R ZKHQ D VFDOH VWDUWV DJDLQ DW ZH FDQ ZULWH WKH QXPEHU LQ WKH IRUP RI WKDW WKLV LV WKH RFWDYH ZLWK ZKLFK WKH VFDOH VWDUWV DJDLQ †† RQO\ DQ RFWDYH KLJKHU 7KHQ ZH MXVW FRQWLQXH ZULWLQJ WKH QXPEHUV LQ RUGHU IURP WKHUH 7KLV PHDQV WKDW WKH QRWH ZLOO EH WKH VDPH DV WKH QG WKH ZLOO EH WKH VDPH DV WKH UG WK VDPH DV WK WK VDPH DV WK HWF

1	2	3	4	5	6	7	8	9	10	11	12	13	14

,I ZH KDYH RXU XVXDO FKRUG DQG H[WHQG LWH\ D WKLUG ZH ZRXOG ODQG RQ WKH WK H[WHQG LI ZH H[WHQG WKDW E\ DQRWKHU WKLUG ZH ZRXOG JHW WR WKH DQG LI WKDW E\ D WKLUG ZH ZRXOG JHW WR WKH WK

6R WKH RUGHU LQ ZKLFK WKH FKRUGV H[WHQG LV

7ULDGV ! WK FKRUGV PRVW RIWHQ DV TXDGDGV ! HV ! HV ! HV

7R VXP XS VR IDU

- $GGLQJ UGV WR UG EDVHG WULDGV JLYHV XV WK FKRUGV %HFDXVH WKHVH FKRUGV XVXDOO\ FRQWDLQ IRXU QRWHV WKH\ HUH QRZ TXDGDGV :LWK WULDGV FKRUGV IRUP WKH IRXQGDWLRQ RI WKH UG EDVHG 7HUWLDQ KDUPRQ\ WK FKRUGV DUH QRW FRQVLGHUHG ΔH[WHQGHG FKRUGV ÿ EXW WKH\ DUH YLHZHG DV WULDGH[WHQVLRQV
-)RU D FKRUG WR EH DQ H[WHQGHG FKRUG LW KDV WR FRQWDLQ WKH QRWHV WKDW DUH EHQHDWK WKH RFWDYH
- $GGLQJ UGV WR HV JLYHV XV HV 7KHVH FDQ EH QRWH FKRUGV EXW XVXDOO\ VRPH QRQ HVVHQWLDO QRWHV RI D FKRUG WKDW GRQ HW DIIHFW WKH VRXQG PXFK DUH RPLWWHG 7KLV DOVR
- JRHV IRU HV DQG HV
- $GGLQJ UGV WR HV JLYHV XV HV

  $QG DGGLQJ UGV WR HV JLYHV XV HV ZKLFK DUH QRZ IXOO\ H[WHQGHG FKRUGV EHFDXVH WKH\ FRQWDLQ GLVWLQFW QRWHV LQ WKHP

,W HV LPSRUWDQW WR NQRZ WKDW LQ SUDFWLFH QRW DOO FKRUGV DUH SOD\HG RU YRLFHG ZLWK

DOO RI WKHVH QRWHV EHLQJ LQFOXGHG ++ VR WKDW LW LV SRVVLEOH WR SOD\ D FKRUG IRU LQVWDQFH ZKLFK FRQVLVWV RI D URRW UG D WK D DQG D WK E\ SOD\LQJ RQO\ D URRW D UG DQG D WK DQG OHDYH RXW WKH WK ,W LV YHU\ FRPPRQ IRU QRWHV WR EH OHIW RXW RI WKH FKRUG LQ WKLV ZD\ DQG WKHUH DUH GLIIHUHQW UHDVRQV IRU GRLQJ VR 6RPHWLPHV LW LV SK\VLFDOO\ LPSRVVLEOH WR SOD\ DOO WKH QRWHV LQ D FKRUG EXW DOVR VRPHWLPHV OHDYLQJ RXW WKH QRWHV WKDW DUH QRW FUXFLDO ZLOO PDNH WKH FKRUG VRXQG FOHDUHU DQG PRUH SURQRXQFHG +DYLQJ WRR PDQ\ QRWHV LQ D FKRUG PDNHV LW VRXQG FURZGHG XQFOHDU DQG FRQIXVLQJ 6R UHPRYLQJ WKHVH QRQ HVVHQWLDO QRWHV DQG UHGXFLQJ WKH FKRUG WR D TXDGDG RU HYHQ WULDG LV IDYRUDEOH EHFDXVH LW PDNHV WKH FKRUG VRXQG PRUH IRFXVHG FOHDUHU DQG VLPSO\ EHWWHU EHFDXVH WKHUH DUH OHVV QRWHV FODVKLQJ ZLWK RQH DQRWKHU 7KHUH DUH FHUWDLQ ΔUXOHV ÿ DERXW ZKLFK QRWHV FDQ EH OHIW RXW RI D

FKRUG DQG ZKLFK FDQQRW ZH ¶OO JHW WR WKHP LQ D ELW

1RWH WKDW ZH VWRS DW WKH QRWH EHFDXVH ,I ZH ZHUH WR DGG DQRWKHU WKLUG WR RXU HIIHFWLYH FKRUG ZH ZRXOG ODQG RQ WKH QRWH DQG WKLV QRWH LV WKH VDPH DV WKH ILUVW QRWH RI WKH FKRUG RQO\ WZR RFWDYHV KLJKHU :KDW WKLV PHDQV LV WKDW VWDFNLQJ WKLUGV DIWHU WKH ZRXOG RQO\ JHW XV WKH VDPH QRWHV ZH KDG LQ RXU FKRUG 6LQFH WKLV ZRXOGQ ¶W JLYH XV DQ\ QHZ QRWHV WKHUH LV QR SRLQW LQ H[WHQGLQJ DQ\IXUWKHU

$QRWKHU LPSRUWDQW WKLQJ WR NQRZ LV WKDW WKH FRUH SDUW RI WKH FKRUG LV XS WR WKH QRWH 7KHUH DUH PDQ\ YDULDWLRQV RI WKHVH FKRUGV DV ZH ¶YH VHHQ DQG HDFK KDV D QDPH $Q\ IXUWKHU H[WHQVLRQV EH\RQG WKH DUH KDQGOHG DQG GLIIHUHQWO\ 7KLV LV GRQH LQ D ZD\ VR WKDW WKHUH DUH RQO\ WKUHH EDVLF YDULDWLRQV RI HDFK H[WHQGHG FKRUG 0DMRU PLQRU DQG 'RPLQDQW

7KH H[WHQGHG FKRUGV DUH DV IROORZV

0DMRU † WKHVH DUH YHU\ FRRO GUHDP\ VRXQGLQJ FKRUGV 7KH\ FRQVLVW RI D 5RRW 0DMRU UG 3HUIHFW WK 0DMRU WK 0DMRU WK VDPH QRWHV DV WKH 0DMRU QG RQO\ DQ RFWDYH KLJKHU 7KH\ DUH FRPSRVHG RI LQWHUYDOV OLNH D 0DMRU FKRUG PDMRU UG † PLQRU UG † PDMRU UG ZLWK DQRWKHU PLQRU UG DGGHG RQ WRS

&KRUG IRUPXOD LV

& 0DMRU RU &0DM ZRXOG KDYH WKH QRWHV & (*%' DOWKRXJK WKH QRWH * LQ WKLV FDVH LV RIWHQ OHIW RXW RI WKLV FKRUG DV ZHOO DV DOO RWKHU H[WHQGHG FKRUGV

0LQRU † VLPLODUO\ WR 0LQRU FKRUGV WKHVH VKDUH WKH VDPH LQWHUYDOV ZH MXVW KDYH WR DGG DQRWKHU PDMRU RQ WRS

7KH\ FRQVLVW RI D 5RRW PLQRU UG 3HUIHFW PLQRU WK 0DMRU WK

&KRUG IRUPXOD LV E E

& PLQRU RU MXVW &P ZRXOG EH & (E * %E '

'RPLQDQW † WKHVH FKRUGV DUH XVHG RIWHQ LQ IXQN GRPLQDQW LV VRPHWLPHV UHIHUUHG WR DV WKH ¿IXQN FKRUG ¾ DQG RI FRXUVH MD]] +HUH DJDLQ ZH ¾UH MXVW DGGLQJ DQ LQWHUYDO † PDMRU LQ WKLV FDVH † RQ WRS RI GRPLQDQW FKRUG WR JHW WR WKH IURP WKH PLQRU WK

7KHVH FKRUGV FRQVLVW RI D 5RRW 0DMRU 3HUIHFW PLQRU DQG D 0DMRU WK

&KRUG IRUPXOD LV E

&GRPLQDQW RU MXVW & ZRXOG EH &(*%E'

3HUVRQDOO\DOO 'IVDUHVRPHRIP\IDYRULWHFKRUGVWRSOD\RQJXLWDU

0DMRU † WKHVHFKRUGVFRQVLVWRID5RRW0DMRUG 3HUIHFW0DMRU 3HUIHFW0DMRU 0DMRUWK DQG3HUIHFWWK VDPHDVWKH3HUIHFWWK

&KRUGIRUPXODLV

&0DM ZRXOG EH &(*%')

0LQRU † WKHVHFRQWDLQD5RRW PLQRUG 3HUIHFWWK PLQRU 0DMRU 3HUIHFWWK

&KRUGIRUPXODLV E E

&P ZRXOG EH &(E*%E')

'RPLQDQW † WKHVHFRQWDLQD5RRW0DMRUG 3HUIHFWWK PLQRU 0DMRU 3HUIHFWWK

&KRUGIRUPXODLV E

& ZRXOG EH &(*%E')

%HFDXVH 'IVDUH QRWHFKRUGVWKH\FDQEHYHU\LPSUDFWLFDO DQG GLIILFXOWWR SOD\ EXWWKH\FDQEHUHGXFHGWR QRWHFKRUGVVLPSO\E\OHDYLQJRXWWKHWK DQG WKHWKZKLFKDUH XVXDOO\QRQFUXFLDO QRWHVIRUWKHVHFKRUGV

0DMRU † WKHVHFRQWDLQD5RRW0DMRUG 3HUIHFWWK 0DMRU 0DMRU 3HUIHFWWK 0DMRUWK VDPHDV0DMRUWK 7KDWZDVDORWRIQRWHV

&KRUGIRUPXODLV

&0DM KDVWKHQRWHV &(*%')$

0LQRU † FRQWDLQD5RRW PLQRUG 3HUIHFWWK PLQRUWK 0DMRUWK 3HUIHFWWK 0DMRUWK

&KRUGIRUPXODLV E E

&P KDVWKHQRWHV &(E*%E')$

'RPLQDQW † ODVWO\ WKHMH FKRUGV FRQWDLQ D 5RRW 0DMRU 3HUIHFW PLQRU WK 0DMRU WK 3HUIHFW WK 0DMRU WK

&KRUG IRUPXOD LV E

& KDV WKH QRWHV & (* %E ') $

ꞏ V DUH RIWHQ GLIILFXOW FKRUGV WR XVH DQG SOD\ ,W ꞏ V OLNH \RX ꞏ UH SOD\LQJ D IXOO VFDOH DV D FKRUG 7KH\ RFFXU ZLWK OHVV IUHTXHQF\ XVXDOO\ ZLWK RQH RU PRUH QRWHV RPLWWHG EXW ZKHQ WKH\ GR WKH\ FDQ VSLFH XS DQ\ SURJUHVVLRQ VRPHWLPHV ZLWK D VWDUWOLQJ HIIHFW

Extended Chords		7th chord notes — Core part of the chord													Extended chord notes — Extended part of the chord											
		1	b2	2	b3	3	4	#4	5	b6	6	b7	7	8 (1)	b2	2	b3	3	4	#4	5	b6	6	b7	7	8
		R	m2	M2	m3	M3	P4	Aug4	P5	m6	M6	m7	M7	P8	m9	M9	m10	M10	P11	Aug11	P12	m13	M13	m14	M14	P15
9's	Major 9	R				M3			P5				M7			M9										
	minor 9	R			m3				P5			m7				M9										
	Domi-nant 9	R				M3			P5			m7				M9										
11's	Major 11	R				M3			P5				M7			M9			P11							
	minor 11	R			m3				P5			m7				M9			P11							
	Domi-nant 11	R				M3			P5			m7				M9			P11							
13's	Major 13	R				M3			P5				M7			M9			P11				M13			
	minor 13	R			m3				P5			m7				M9			P11				M13			
	Domi-nant 13	R				M3			P5			m7				M9			P11				M13			

7DEOH ([WHQGHG FKRUGV LQWHUYDOLF VWUXFWXUH
ZLWK LQWHUYDOV OLVWHG LQ RFWDYHV

127(WKDW DIWHU WKH ILUVW RFWDYH 3 DOO LQWHUYDOHV DUH WKH VDPH RQO\ KLJKHU E\ DQ RFWDYH WR DQ\ QXPEHU \RX MXVW DGG 7KHVH LQWHUYDOV WKDW DUH ODUJHU WKDQ RQH RFWDYH DUH FDOOHG
&RPSRXQG LQWHUYDOV DQG WKH WK QRWH 3 LV FDOOHG D 'RXEOH 2FWDYH

/RRNLQJ DW WKH 7DEOH \RX FDQ VHH KRZ WKH WK DQG WK DUH ΔIL[HG ÷ WR EHLQJ 0DMRU WK 3HUIHFW WK DQG 0DMRU WK QRWH QR PDWWHU ZKHWKHU WKH H[WHQGHG FKRUG LV PDMRU PLQRU RU GRPLQDQW 6LQFH H[WHQVLRQV DIWHU WKH DUH DOZD\V WKHVH QRWHV ZH MXVW FDOO WKHP WK DQG ,I DQ\RI WKHVH H[WHQGHG QRWHV LV FKDQJHG E\ DKDOIVWHS XS RU GRZQ WKHQ ZKDW ZH KDYH LV VRPHWKLQJ WKDW LV FDOOHG DQ $OWHUHG FKRUG 7KRVH FDQ UHDOO\ PDNH WKH KHDGKXUW EXW ZH ꞏ OO GHDO
ZLWK WKHP LQ D VHSDUDWH VHFWLRQ

5XOHV IRU /HDYLQJ 2XW WKH 1RWHV LQ ([WHQGHG &KRUGV

$V ZH ¹YH VDLG VRPH RI WKH QRWHV LQ FRPSOH[FKRUGV OLNH ¹V ¹V DQG ¹V FRXOG EH DQG DUH PRVW RIWHQ PLVWDNHQ ZKLOH VWLOO UHWDLQLQJ WKH GLVWLQFWLYH TXDOLW\

RI D WK WKRU WKFKRUG 7KH IROORZLQJ UXOHV DUH PRUH OLNH JXLGHOLQHV DQG OHVV OLNH WKH UXOHV <RX FDQ UHDOO\ XVH DQ\ FRPELQDWLRQ RI QRWHV WKDW \RX ZDQW DV ORQJ DV LW VRXQGV JRRG WR \RX ,Q IDFW DQ\ UXOH LQ PXVLF FDQ EH EURNHQ LI LW VRXQGV JRRG

- ZKHQ PRVW LPSRUWDQW QRWHV LQ D FKRUG DUH LW¶V 5RRW WK DQG ¹ WKHVH QRWHV KDYH WR EH
- SUHVHQW PRVW RI WKH WLPH 7R WK LQ D WULDG RI FRXUVH
- +DYLQJ VDLG WKDW WKH UG FDQ EH H[FOXGHG ZKHQ WKHUH LV VRPH FODVKLQJ EHWZHHQ WKH QRWHV 7KLV ZRXOG FUHDWH D VXVSHQGHG W\SH RI FKRUG
- 6WUDQJHO\ WKH URRW QRWH DOVR GRHVQ ¹W KDYH WR EH SODHG XQGHU VRPH FLUFXPVWDQFHV)RU LQVWDQFH VLQFH 5RRW LV WKH ORZHVW QRWH LQ D FKRUG LW FDQ EH OHIW RXW LQ D EDQG VLWXDWLRQ ZKHUH \RX KDYH D EDVV SOD\HU RU VRPHRQH HOVH ZKR LV SOD\LQJ WKH URRW 2WKHUZLVH WKH FKRUGV VRXQG EHWWHU DQG OHVV PHVV\ ZLWK LW
- ,I \RX OHDYH RXW WK LW ZLOO UHVXOW LQ JHWWLQJ GLIIHUHQW NLQG RI FKRUGV FDOOHG $GGHG WRQH FKRUGV PRUH RQ WKHP LQ WKH QH[W VHFWLRQ
- WK QRWH LQ D FKRUG FDQ EH OHIW RXW PRVW RI WKH WLPH XQOHVV LW LV RQH LWV FKDUDFWHULVWLF QRWHV
- WK FKRUGV VKRXOG KDYH 7KH WK QRWH FDQ EH HDVLO\ OHIW RXW KHUH WK FKRUG VKRXOG KDYH DW OHDVW ¹ ZH FDQ H[FOXGH WKH WK DQG WK WK FKRUGV VKRXOG KDYH DW OHDVW ¹ ZH FDQ HOLPLQDWH ERWK WKH WK DQG WKH

3UREOHP ZLWK ¹V

6RPH WK FKRUGV QDPHO\ 0DMRU DQG 'RPLQDQW DUH VSHFLDO EHFDXVH WKH 3HUIHFW WK QRWH LV DQ RFWDYH XS IURP WKH 3HUIHFW WK QRWH ZKLFK PHDQV WKDW WKH\ DUH WKH VDPH QRWH 3HUIHFW WK LV D VHPLWRQH XS IURP WKH 0DMRU UG DQG WKHVH FKRUGV FRQWDLQ ERWK RI WKRVH QRWHV

)RU H[DPSOH & GRPLQDQW FRQWDLQV WKH QRWHV & 5 (0 %E P) 3 DQG ZH FDQ VHH WKDW WKH) QRWH 3 LV RQO\ D VHPLWRQH XS IURP (0

DQG HYHQ WKRXJK LW ·V DFWXDOO\ DQ RFWDYH DQG D VHPLWRQH XS IURP (WKLV FDQ FDXVH D FODVK EHWZHHQ WKH VHWZR QRWHV DQG SURGXFH DQ XQSOHDVDQW VRXQG

7KLV LV RIWHQ DYRLGHG E\ VKDUSLQJ WKH WK QRWH WKXV JHWWLQJ 'RPLQDQW FKRUG E RU 0DMRU FKRUG &KRUGV OLNH WKHVH DUH FDOOHG $OWHUHG FKRUGV ZKLFK ZH ·YH PHQWLRQHG EHIRUH

$QRWKHU ZD\ WR DYRLG WKLV ZRXOG EH WR FRPSOHWHO\ UHPRYH WK ZKLFK FUHDWHV DVXVSHQGHG W\SH RI FKRUG EHFDXVH WKH KDV EHHQ UHSODFHG ZLWK WKH 7KHVH FKRUGV FRXOG EH QDPHG IRU H[DPSOH 0DMRU VXV DQG 'RPLQDQW VXV E 7KHUH DUH GLIIHUHQW ZD\V \RX FDQ JR DERXW QDPLQJ FRPSOLFDWHG FKRUGV VXFK DV WKHVH ·· DOZD\V IROORZ ORJLF ZKHQ GRLQJ VR

,W VKRXOG EH DOVR VDLG WKDW WKHVH NLQG RI QRWH FODVKHV GRQ ·W KDYH WR EH DYRLGHG DW DOO ,I VRPHWKLQJ VRXQGV EDG LQ WKHRU\ OLNH LQ WKLV H[DPSOH LW GRHVQ ·W PHDQ WKDW LW ZLOO VRXQG EDG ZKHQ \RX SOD\ LW RQ \RXU LQVWUXPHQW $V ZH VDLG WKH ΔUXOHV ÷ FDQ EH EURNHQ LI LW VRXQGV JRRG LQ WKH ULJKW FRQWH[W

$GGHG 7RQH &KRUGV · :KDW ·V WKH 'LIIHUHQFH

,Q WKH ODVW VHFWLRQ ZH PHQWLRQHG WKDW WKH FDQ EH OHIW RXW RI WKH FKRUG DQG WKLV XVXDOO\ UHVXOWV LQ JHWWLQJ GLIIHUHQW W\SH RI FKRUGV FDOOHG $GGHG WRQH FKRUGV $GGHG FKRUGV CDGG ·I IRU VKRUW DUH YLHZHG DV VLPSOH WULDGV ZLWK RQH RU PRUH DGGHG QRWHV 7KH QRWHV WKDW DUH DGGHG LQ WKLV ZD\ DUH XVXDOO\

0DMRU QG ·· DGG 3 0 0 5 ··

3HUIHFW WK ·· DGG 3 3 0 5 ··

0DMRU WK ·· DGG 0 3 0 5 ··

3HUIHFW WK ·· DGG 3 3 0 5 ··

0DMRU WK ·· DGG 0 3 0 5 ··

2XW RI WKHVH FKRUGV WKH DGG ·V DUH SUREDEO\ WKH PRVW FRPPRQ 7KH\ DUH XVHG RIWHQ LQ SRS DQG URFN WR VSLFH XS WKH UHJXODU WULDG FKRUGV &DGG FKRUG &(* ' LV WKH DGG FKRUG WKDW PRVW EHJLQQHUV ILUVW OHDUQ RQ JXLWDU EHFDXVH LW ·V HDV\ WR SOD\

$GG LV D W\SLFDO FKRUG WKDW VKRXOG VRXQG EDG LQ WKHRU\ EHFDXVH RI WKH FODVK EHWZHHQ 0 DQG 3 ZKLFK DUH D VHPLWRQH DSDUW EXW LQ UHDOLW\ WKLV LV RQH RI WKH FRPPRQ\ XVHG FKRUGV RQ JXLWDU WKDW VRXQGV JRRG HYHQ WKRXJK LW VKRXOGQ'W VSHFLILFDOO\ 'DGG FKRUG ') * $ EHFDXVH RI LWV FRQYHQLHQW SRVLWLRQ RQ JXLWDU ,W GRHV KDYH VRPH GLVVRQDQFH WR LW EXW WKDW FDQ DOVR EH DJRRG WKLQJ ZKHQ ZH ZDQW LW 1RWH WKDW DGG DQG DGG DUH HVVHQWLDOO\ WKH VDPH FKRUGV EXW ZLWK D GLIIHUHQW QRWH RUGHU RU FKRUG YRLFLQJ $GG 3HUIHFW[WK LV DQ RFWDYH XS IURP DGG 3HUIHFW[WK DQG LV SRVLWLRQHG KLJKHU WKDQ 3HUIHFW[WK LQ D FKRUG &KRUG YRLFLQJV DUH H[SODLQHG D OLWWOH ELW IXUWKHU LQ D VHSDUDWH VHFWLRQ

1RWLFH KRZ DOO WKHVH FKRUGV DUH GLIIHUHQW IURP WKH RQHV ZH ¿YH KDG VR IDU)RU H[DPSOH DQ DGG FKRUG LV VLPLODU WR D VXV FKRUG EHFDXVH WKH PDMRU[WK LV WKH VDPH QRWH DV WKH PDMRU[QG RQO\ DQ RFWDYH KLJKHU %XW DGGHG WR QH FKRUGV WKH[UG ZKLOH VXVSHQGHG FKRUGV UHSODFH LW ZLWK VRPHWKLQJ HOVH PRVW FRPPRQO\ ZLWK WKH[QG RU[WK 7KH VDPH JRHV IRU VXV DQG DGG FKRUGV

,Q PXVLF WKHRU\ QRPHQFODWXUH IRU VRPH FRQFHSWV LV QRW YHU\ FRQVLVWHQW ¿ GLIIHUHQW PXVLFLDQV PD\ VRPHWLPHV QDPH WKH VDPH WKLQJ GLIIHUHQWO\ 2QH VXFK LQVWDQFH LV ZKHQ D 0DMRU FKRUG LV VRPHWLPHV LQFRUUHFWO\ ZULWWHQ DV DGG 7KLV LV ZURQJ EHFDXVH DGGHG WRQH FKRUGV GRQ¿W KDYH WKH[WK ZKLOH UHJXODU 0DMRU H[WHQGHG FKRUGV GR 7KLV DOVR KDSSHQV ZLWK 0DMRU¿V DQG 0DMRU¿V VR GRQ¿W OHW WKLV FRQIXVH \RX LI \RX VHH LW ¿ PDNH VXUH WR FKHFN WKH VWUXFWXUH RI D FKRUG WR NQRZ ZKDW FKRUG \RX¿UH GHDOLQJ ZLWK

$OVR ZKDW VRPHWLPHV FDXVHV VRPH FRQIXVLRQ LV GLVWLQJXLVKLQJ DQ\ 0DMRU
H[WHQGHG FKRUG[WK [WK RU [WK ZLWK D 'RPLQDQW H[WHQGHG FKRUG RU IRU H[DPSOH &0DMRU DQG & ¿ WKH IRUPHU LV D PDMRU FKRUG FRQWDLQLQJ WKH 0DMRU[WK ZKLOH WKH ODWWHU LV DQ DEEUHYLDWLRQ RI D GRPLQDQW FKRUG ZLWK WKH PLQRU[WK

'HP\VWLI\LQJ WKH $OWHUHG &KRUGV

$OWHUHG FKRUGV DUH YHU\ FRPSOH[FKRUGV WKDW FDQ KDYH PDQ\ GLIIHUHQW SRVVLEOLWLHV GHILQLWLRQV DQG ZD\V RI WKLQNLQJ DERXW WKHP 7KLV LV ZK\ WKH\ FDQ EH YHU\ FRQIXVLQJ GLIILFXOW DQG LQFRQVLVWHQW LQ WKH ZD\ GLIIHUHQW PXVLFLDQV DQG PXVLF WKHRU\ SURIHVVRUV LQWHUSUHW WKHP %XW WKH\ DUH ZHOO ZRUWK WKH HIIRUW

EHFDXVH RQFH \RX XQGHUVWDQG WKHP \RX FDQ UHDOO\ PDNH XS DQ\ FKRUG \RX ZDQW DQG XQGHUVWDQG WKH KDUPRQ\ EHWWHU 0DNH VXUH \RX ·UH FRPIRUWDEOH ZLWK HYHU\WKLQJ ZH ·YH KDG VR IDU HVSHFLDOO\ ZLWK WKH H[WHQGHG FKRUGV EHIRUH WUYLQJ WR WDFNOH WKH DOWHUHG FKRUGV

/HW ·V VLPSOLI\ LW DW WKH EHJLQQLQJ DQG VD\ WKDW DOWHUHG FKRUGV DUH DQ\ H[WHQGHG FKRUGV WKDW KDYH RQH RU PRUH RI WKHLU QRWHV FKDQJHG FKURPDWLFDOO\ /LNH WKH H[WHQGHG FKRUGV WKH\ FDQ DOVR EH MXVW 0DMRU PLQRU RU 'RPLQDQW 7KHLU

HIWHQVLRQV DUH VWLOO WKH WK RU EXW LQ DQ DOWHUHG FKRUG WKHVH QRWHV KDYH EHHQ FKDQJHG E\ D VHPLWRQH XS RU D VHPLWRQH GRZQ

7KHVH FKDQJHV DUH FDOOHG FKURPDWLF DOWHUDWLRQV DQG WKH\ DUH E E E 7KLV LV WKH ZD\ ZH ZULWH WKHP GRZQ

+RZHYHU VLQFH WKHUH DUH WKUHH YHUVLRQV RI $OWHUHG FKRUGV PDMRU PLQRU RU GRPLQDQW QRW DOO RI WKHVH DOWHUDWLRQV PDNH VHQVH LQ HDFK YHUVLRQ DQG WKLV LV EHFDXVH RI WKH GLIIHUHQW QRWHV LQ WKH FRUH SDUW RI WKH FKRUG WKDW HDFK RI WKHVH WKUHH TXDOLWLHV FRQWDLQ ,I\RX UHPHPEHU WKH FRUH SDUW RI WKH FKRUG LV XS WR WKH WK QRWH RU LQ RWKHU ZRUGV WKH WK FKRUGV DUH WKH FRUH SDUW RI DQ H[WHQGHG FKRUG 7R XQGHUVWDQG DOO WKLV DQG VKRZ ZKLFK DOWHUDWLRQV DUH SRVVLEOH IRU ZKLFK FKRUG OHW ·V JR RYHU HDFK YHUVLRQ

0DMRU &KRUG $OWHUDWLRQV

E DQG

0DMRU FKRUG FRQVLVWV RI WKH QRWHV 5 0 3 0 ,I ZH H[WHQG WKLV FKRUG WR WKH 0DMRU WK DQG DOWHUH WKLV QRWH VR WKDW LW LV D VHPLWRQH ORZHU PHDQLQJ E ZH ZRXOG JHW DQ DOWHUHG FKRUG ZLWK D QDPH WKDW ZH FDQ VLPSO\ ZULWH DV 0DMRUE RU 0DM E

,Q & WKH QRWHV RI WKH & 0DM E ZRXOG EH & (* % 'E

127(WKDW WKH DOWHUHG FKRUG QDPHV DUH WUDGLWLRQDOO\ ZULWWHQ RQ WKH VKHHW ZLWK WKH DOWHUDWLRQV SXW LQ SDUHQWKHVLV DQG VXSHUVFULSWHG QH[W WR D FKRUG WKDW LV DOWHUHG OLNH WKLV

0DMRU E ,W GRHVQ ·W UHDOO\ PDWWHU ZKLFK ZD\ \RX FKRRVH WR ZULWH LW DV ORQJ DV LW ·V YLVLEOH

7KRXJKLI DFKRUGKDVPRUHWKDQRQHDOWHUDWLRQ ZKLFKLVSRVVLEOH LWLVSUHIHUDEOHWR ZULWH WKHPLQDWUDGLWLRQDOZD\

E QRWH LVWKHPLQRU WK LQWHUYDO ZKLFKLVWKHVDPHQRWHDVWKHPLQRU QG 7KLV LQWHUYDOLVRQO\DVHPLWRQHXSIURPWKH5RRW DQGWKLVFDXVHVDUHDOO\GLVRQDQW

VRXQG 6R E LV DYDOLG DOWHUDWLRQ IRU D 0DMRU WWSH FKRUG EHFDXVH LW LV D XQLTXH QRWH

%XW ZKDW LI ZH DOWHU WKH E\ D VHPLWRQH XS LQ WKH 0DMRU FKRUG"

,I \RX ORRN DW WKH 7DEOH ([WHQGHG FKRUGV LQWHUYDOOLF VWUXFWXUH \RX FDQ VHH WKDW WKH LV DFWXDOO\ D PLQRU ZKLFK LV WKH VDPH QRWH DV WKH PLQRU 0DMRU FKRUGV FRQWDLQ WKH 0DMRU VR WKLV SURGXFHV D FODVK EHWZHHQ WKH 0DMRU DQG WKH PLQRU $OO RI WKHVH FKRUGV FDQ EH PDQ\ GLIIHUHQW WKLQJV DQG LQWHUSUHWHG LQ PDQ\ ZD\V GHSHQGLQJ RQ WKH KDUPRQ\ DQG WKDW 'V ZK\ WKH\ 'UH FRPSOH[

<RX FDQ ZULWH WKLV DV 0DM

& 0DM KDV WKH QRWHV & (* % '

,I \RX OHDYH RXW WKH 0DMRU KHUH \RX ZRXOG JHW D VXVSHQGHG FKRUG WKDW LV QRW UHDOO\ VXVSHQGHG EHFDXVH LW KDV WKH PLQRU PLQRU ++ WKLV ZRXOG EH D PLQRU FKRUG ZLWK D 0DMRU QRWH ++ WKH RSSRVLWH RI WKH 'RPLQDQW FKRUG

E DQG

/HW 'V VHH ZKDW ZRXOG KDSSHQ LI ZH KDG D E LQ RXU 0DMRU FKRUG)LUVW ZH HQGHG WKLV FKRUG E\ WZR WKLUGV WR WKH DQG WKHQ WR WKH 7KLV ZRXOG JLYH XV WKH 0DMRU FKRUG ZLWK WKH QRWHV 5 0 3 0 0 3

$JDLQ LI \RX ORRN DW WKH 7DEOH \RX FDQ VHH WKDW WKH 3HUIHFW LV WKH VDPH QRWH DV WKH 3HUIHFW ,I ZH DOWHU WKLV QRWH E\ D VHPLWRQH GRZQ ZH JHW WKH 0DMRU ZKLFK LV WKH VDPH DV WKH 0DMRU QRWH 6LQFH RXU XQDOWHUHG 0DMRU FKRUG DOUHDG\ FRQWDLQV WKH 0DMRU WKHUH LV QR SRLQW LQ WKLV SDUWLFXODU DOWHUDWLRQ

2Q WKH RWKHU VLGH LV WKH VDPH DV WKH $XJPHQWHG 7KDW ZRXOG JLYH XV D WZR VHPLWRQH FODVK EHWZHHQ 3 $XJ DQG 3 EXW LQ WKLV FDVH ZH ZRXOG OHDYH RXW WKH ILIWK

+RZ GR ZH QDPH WKLV FKRUG":H FDQ 'W QDPH LW 0DM E EHFDXVH WKDW ZRXOG EH YHU\ FRQIXVLQJ :KDW ZH FDQ GR LV EDFN GRZQ D WKLUG WR WKH DQG WKHQ ZULWH 0DM ,Q WKLV ZD\ ZH VLPSO\ LQGLFDWH WKDW WKLV LV D 0DMRU FKRUG ZLWK D VKDUSHG QRWH ,Q & WKH QRWHV RI WKLV FKRUG ZRXOG EH & (* % ')

E DQG

:KHQ LW FRPHV WR WKH ‐1V ZH H[WHQG WKH 0DMRU FKRUG WR WKH 0DMRU E\ WKUHH WKLUGV 7KH 0DMRU FKRUG ZRXOG WKHQ KDYH WKH QRWHV 5 0 3 0 0 3 0

,I ZH ORZHU WKH 0DMRU $WK QRWH E\ D VHPLWRQH E ZH ZRXOG JHW WKH PLQRU $WK ZKLFK LV WKH VDPH DV WKH PLQRU $WK QRWH ZKLFK LV D XQLTXH QRWH LQ WKH LQLWLDO FKRUG :H QDPH WKLV DOWHUHG FKRUG E\ EDFNLQJ GRZQ D WKLUG DQG WKHQ ZULWLQJ 0DM E RU WUDGLWLRQDOO\ 0DM$F ,Q & WKH QRWHV DUH & (* % ') $E

ZRXOG EH WKH PLQRU $WK ZKLFK LV WKH VDPH DV WKH PLQRU $WK QRWH 7KLV LV DOVR D XQLTXH QRWH ZH FDQ KDYH LQ D 0DM FKRUG 7KH QDPH RI WKLV DOWHUHG FKRUG ZRXOG EH 0DM ,Q & WKH QRWHV DUH & (* % ') $

Altered chords		Core part of the chord				Extended part of the chord											
						m9	M9	m10	M10	P11	Aug11	P12	m13	M13	m14	M14	P15
Major type	b9	R	M3	P5	M7	b9											
	#9	R	M3	P5	M7			#9									
	#11	R	M3	P5	M7		M9				#11						
	b13	R	M3	P5	M7		M9			P11			b13				
	#13	R	M3	P5	M7		M9			P11					#13		

7DEOH 3RVVLEOH FKURPDWLF DOWHUDWLRQV IRU D 0DMRU W\SH FKRUG

0LQRU &KRUG $OWHUDWLRQV

E DQG

0LQRU FKRUG FRQVLVWV RI WKH QRWHV 5 P 3 P :KHQ ZH H[WHQG WKLV FKRUG WR WKH $WK DQG ORZHU LW E\ D VHPLWRQH E ZH JHW D PLQRU FKRUG ZLWK D E VR ZH ZULWH LW P E

E LV D XQLTXH QRWH LQ WKLV FKRUG EHFDXVH DQG LI \RX UHPHPEHU LW LV WKH VDPH DV WKH PLQRU QG

,Q & WKH QRWHV RI WKLV FKRUG ZRXOG EH & (E * % E ' E

,IZHUDLVHWKH[WK E\DVHPLWRQHXS ZHJHWWKHPLQRU[WK QRWHZKLFKLVWKH VDPHDVWKHPLQRU[UG ++ ZKLFKLVDOUHDG\IRXQGLQRXUXQDOWHUHGFKRUG 7KDW'V ZK\WKHUHLVQRSRLQWLQGRLQJWKLVSDUWLFXODUDOWHUDWLRQ

E DQG

([WHQGLQJWKHPLQRU FKRUGWRWKHPLQRU UHVXOWVLQWKHQRWHV 5P 3P 0 3 /RZHULQJWKH [WK E\DVHPLWRQHE JLYHVD0DMRU[UG QRWH$JDLQLQ RUGHUWRQDPHWKLVFKRUG ZHEDFN GRZQD WKLUG WR[WKH DQGFDOOLW PE 7KLVLVDQRWKHUFKRUGWKDWFRQWDLQVERWKWKH[UG0DMRU [WK0DMRU DFWXDOO\ DQG[WKHPLQRU[UG 7KHQRWHV RI&P E FKRUGZRXOGEH &(E*%E'(

5DLVLQJWKH [WK E\ D VHPLWRQH JLYHV WKH $XJ[WK QRWH :HFDOOLW VLPSO\ P 7KHQRWHV RI&P ZRXOGEH &(E*%E')

E DQG

0LQRU FKRUGKDVWKHQRWHV 5P 3P 0 3 0 7KHILUVWDOWHUDWLRQLV WKHE ZKLFKLVWKHPLQRU[WK + HTXDOWRDPLQRU[WK 7KHQDPHRIWKLVFKRUG WKHQLV P E ,Q& WKHQRWHVDUH &(E*%E')$E

7KHVHFRQGDOWHUDWLRQLVWKH ZKLFKLVHTXDOWRDPLQRU[WK %XWVLQFHZH DOUHDG\KDYHDPLQRU[WK LQWKHLQLWLDOFKRUGWKHUHLVQRQHHGIRUWKLV DOWHUDWLRQ

Altered chords		Core part of the chord				Extended part of the chord											
						m9	M9	m10	M10	P11	Aug11	P12	m13	M13	m14	M14	P15
Minor type	b9	R	m3	P5	m7	b9											
	b11	R	m3	P5	m7				b11								
	#11	R	m3	P5	m7		M9				#11						
	b13	R	m3	P5	m7		M9			P11			b13				

7DEOH 3RVVLEOHFKURPDWLF DOWHUDWLRQV IRUDPLQRUWSHFKRUG

'RPLQDQW&KRUG$OWHUDWLRQV

'RPLQDQW FKRUGV DUH XQLTXH LQ D ZD\ EHFDXVH WKH FKURPDWLF DOWHUDWLRQV DUH XVXDOO\ GRQH RQ WKHVH WZR\SHV RI FKRUGV 7KLV LV EHFDXVH WKHVH FKRUGV DUH GHVLJQHG IRU WHQVLRQ ZKLFK WKH\ GG ZKHQ WKH\ RFFXU LQ D FKRUG SURJUHVVLRQ 7KH SXUSRVH RI DGGLQJ DOWHUHG QRWHV WR D GRPLQDQW FKRUG LV WR SURYLGH HYHQ PRUH WHQVLRQ
ZKLFK WKHQ ZDQWV WR UHVROYH EDGO\ WR D VWDEOH FKRUG ,W LV IRU WKLV UHDVRQ WKDW\ RX ZLOO RIWHQ VHH DOWHUHG QRWHV RQ D GRPLQDQW W\SH FKRUG

E DQG

'RPLQDQW FKRUG FRQVLVWV RI WKH QRWHV 5 0 3 P

E QRWH LV HTXDO WR D PLQRU QG 7KH QDPH RI WKLV FKRUG LV E & E ZRXOG EH & (* %E 'E

2Q WKH RWKHU VLGH RQ WRS RI WKH GRPLQDQW LV VSHFLDO EHFDXVH LW LV RQH RI WKH PRVW SRSXODU DOWHUHG FKRUGV XVHG LQ IXQN EOXHV URFN DQG MD]] ,W LV FRPPRQO\ UHIHUUHG WR DV WKH +HQGUL[FKRUG VSHFLILFDOO\ (EHFDXVH RI WKH RSHQ (VWULQJ RQJXLWDU LV HTXDO WR D PLQRU UG DQG KDYLQJ WKLV QRWH DORQJ ZLWK D 0DM RU DQG PLQRU WK SURGXFHV D UHDOO\ IXQN\ VRXQGLQJ FKRUG ,Q & WKH QRWHV RI WKLV FKRUG DUH & (* %E (E

E DQG

E DV ZH NQRZ E\ QRZ LV HTXDO WR D 0DMRU UG 7KLV QRWH LV DOUHDG\ D SDUW RI WKH GRPLQDQW WK FKRUG

LV HTXDO WR DQ $XJPHQWHG WK QRWH 7KH QDPH RI WKLV DOWHUHG FKRUG ZRXOG EH ,Q & WKLV FKRUG ZRXOG KDYH WKH QRWHV & (* %E ')

E DQG

)LQDOO\ E LQ D FKRUG JLYHV XV WKH PLQRU WK QRWH 7KH QDPH RI WKLV GRPLQDQW FKRUG ZRXOG EH E 7KH QRWHV LQ & DUH & (* %E ') $E

5DLVLQJ WKH WK E\ D VHPLWRQH JLYHV XV WKH PLQRU WK ZKLFK LV DOUHDG\ LQ WKH GRPLQDQW FKRUG

Altered chords		Core part of the chord				Extended part of the chord											
						m9	M9	m10	M10	P11	Aug11	P12	m13	M13	m14	M14	P15
Dom-inant type	b9	R	M3	P5	m7	b9											
	#9	R	M3	P5	m7			#9									
	#11	R	M3	P5	m7		M9				#11						
	b13	R	M3	P5	m7		M9			P11			b13				

7DEOH 3RVVLEOH FKURPDWLF DOWHUDWLRQV
IRU D 'RPLQDQW W\SH FKRUG

7R VXPPDUL]H

- 7KHUH LV QR E DOWHUDWLRQ RQ D 0DMRU W\SH FKRUG EHFDXVH WKDW QRWH LV DOUHDG\ SDUW RI
- WKH FKRUG
- 7KHUH DUH QR DQG DOWHUDWLRQV RQ D PLQRU W\SH FKRUG DQG
- 7KHUH DUH QR E DQG DOWHUDWLRQV RQ D 'RPLQDQW W\SH FKRUG IRU WKH VDPH UHDVRQ

$OWHUDWLRQ 3RVVLELOLWLHV DQG WKH 8VH RI E DQG

:H FDQ DGG DQ\ RI WKH FKRUPDWLF DOWHUDWLRQV WR D FKRUG ZLWKRXW KDYLQJ WKH XVXDO H[WHQVLRQV LQ LW)RU H[DPSOH LI ZH ZDQW WR DGG E WR D PLQRU FKRUG ZH GRQ·W KDYH WR H[WHQG LW DOO WKH ZD\ WR WKH DQG WKXV KDYLQJ WKH LQWHUH :H FDQ MXVW VLPSO\ DGG WKH E RQ WRS RI WKH PLQRU FKRUG †† UHVXOWLQJ LQ D P E FKRUG ZLWK WKH QRWHV 5 P 3 P P

$QRWKHU H[DPSOH ,I ZH ZDQW WR KDYH D GRPLQDQW FKRUG ZLWK D ZH GRQ·W QHHG WR KDYH D WKH UHV -XVW DGGLQJ WKH RQ WRS RI WKH GRPLQDQW FKRUG ZRXOG UHVXOW LQ FKRUG ZLWK WKH QRWHV 5 0 3 P $XJ $OVR QRWH WKDW ZKHQHYHU WKHUH LV QR FKRUG TXDOLW\ SUHFHGLQJ WKH ILUVW QXPEHU LQ WKH FKRUG·V QDPH OLNH LQ WKLV FDVH DOZD\V DVVXPH WKDW LW LV D GRPLQDQW FKRUG

:H FDQ DOVR KDYH PRUH WKDQ RQH DOWHUDWLRQ LQ D FKRUG DV ORQJ DV WKH\ PDNH VHQVH)RU H[DPSOH 0DM E E 7KLV FKRUG QDPH ORRNV PHVV\ VR WKH XVXDO ZD\ WR ZULWH LW RQ D VKHHW ZRXOG EH 0DM E ZKLFK GLIIHUHQWLDWHV PRUH

FOHDUO\ WKH FRUH SDUW RI WKH FKRUG 0 †† DM DQG WKH DOWHUDWLRQV WKDW DUH SXW LQ
SDUHQWKHVLV

2Q DQRWKHU QRWH \RX PLJKW VRPHWLPHV VHH E DQG DV FKRUG DOWHUDWLRQV 7KLV LV RIWHQ GRQH LQ MD]] E LV WKH VDPH QRWH DV DQG LV WKH VDPH DV E 7KHVH DUH MXVW GLIIHUHQW QDPHV IRU WKH VDPH WKLQJ WKH XVH RI ZKLFK PRVWO\ GHSHQGV RQ SHUVRQDO SUHIHUHQFH RI D FRPSRVHU DUUDQJHU RU D PXVLF WKHRU\ SURIHVVRU \RX ¹UH VSHDNLQJ WR 7KH UXOH RI WKXPE KRZHYHU LV WKDW LV XVXDOO\ VHHQ RQ D 0DMRU W\SH FKRUG ZKLOH E LV VHHQ RQ PLQRU DQG 'RPLQDQW W\SH FKRUGV WR VWD\ FRQVLVWHQW ZLWK WKH XVH RI IODWV WKDW RFFXU LQ WKHVH FKRUGV ,Q RWKHU ZRUGV WKLV LV GRQH WR DYRLG KDYLQJ ERWK VKDUSV DQG IODWV ZKHQ \RX OLVW RXW WKH FKRUG QRWHV)RU H[DPSOH LQ D &P FKRUG ZLWK WKH QRWHV & (E * %E) \RX FRXOG XVH E LQVWHDG DQG QDPH LW &P E 7KH QRWHV RI WKLV FKRUG ZRXOG WKHQ EH & (E*%E *E 6DPH WKLQJ JRHV IRU DQG E

$OVR LI D FRPSRVHU RU DUUDQJHU GHFLGHV WKDW D FKRUG ZLWK WKHVH QRWHV LV WUDYHOLQJ
GRZQZDUGV RQ WKH QH[W FKRUG WKH\ ¹UH JRLQJ WR ZULWH RXW D FKRUG QDPH ZLWK IODWV DQG XVH E DQG E 2Q WKH RSSRVLWH LI WKH\ GHFLGH WKDW D FKRUG LV WUDYHOLQJ XSZDUGV WKH\ZRXOG PRVW OLNHO\ XVH VKDUSV VXFK DV DQG WR QDPH D FKRUG

/DVWO\ WKH PRVW FRPPRQ DOWHUHG QRWHV RQ D FKRUG DUH E E DQG E 7KHVH PRVWO\RFFXU LQ MD]] RQ GRPLQDQW W\SH FKRUGV

%RUURZHG &KRUGV YV $OWHUHG &KRUGV † &ODVVLFDO YV -D]] 9LHZ

5HPHPEHU ZKHQ ZH VDLG WKDW $OWHUHG FKRUGV FDQ EH GLIILFXOW WR JUDVS" :HOO WKH UHDVRQ LV WKDW WKHUH DUH EDVLFDOO\ WZR ZD\V RI ORRNLQJ DW WKHP FODVVLFDO DQG MD]]

(DUOLHU LQ WKLV FKDSWHU ZH PHQWLRQHG WKDW HDFK VFDOH SURGXFHV D VHW RI FKRUGV DOO
EXLOW LQ WKLUGV RQ HDFK RI LWV QRWHV DQG RUJDQL]HG DURXQG WKH URRW QRWH RI WKDW
VFDOH ZKLFK LV WKH NH\ WKDW WKRVH FKRUGV EHORQJ WR :H KDYH \HW WR JR RYHU WKLV LQ IXOO GHWDLO LQ WKH QH[W IHZ VHFWLRQV EXW WKLV LV LPSRUWDQW WR UHPHPEHU QRZ
EHFDXVH LQ WKH FODVVLFDO ZD\ RI ORRNLQJ DW WKH DOWHUHG FKRUGV DQ\ FKRUG WKDW KDV

EHHQ DOWHUHG VR WKDW LW FRQWDLQV RQH RU PRUH QRWHV WKDW DUH QR ORQJHU SDUW RI WKH
RULJLQDO VFDOH PHDQLQJ WKDW WKH FKRUG QR ORQJHU ILWV WKH NH\ LV FRQVLGHUHG DQ
DOWHUHG FKRUG

$FKRUG OLNH WKLV WKDW VRXQGV VXUSULVLQJ DQG CRXW RI NH\ ·H WR D OLVWHQHU LQ D PXVLFDO
SLHFH LV DOVR FDOOHG D ERUURZHG FKRUG RU QRQ GLDWRQLF FKRUG 7KLV LV VLPSO\ D FKRUG WKDW LV ERUURZHG IURP D SDUDOOHO PRGH KHQFH WKH QDPH 3DUDOOHO PRGHV LI \RX UHPHPEHU VKDUH WKH VDPH NH\ VDPH WRQDO FHQWHU EXW KDYH GLIIHUHQW SDUHQW VFDOH 7KLV SURFHVV RI ERUURZLQJ FKRUGV IURP D SDUDOOHO PRGH LV FDOOHG PRGDO LQWHUFKDQJH RU PRGDO PL[WXUH

)RU H[DPSOH ZH KDYH D FKRUG SURJUHVVLRQ WKDW LV LQ WKH NH\ RI &PDMRU

&PDM † $P †)PDM † *

,I ZH FKDQJH WKH)PDMRU FKRUG LQ WKH SURJUHVVLRQ WR DQ)PLQRU VR WKDW LW LV

&PDM † $P †)P † *

:H ZRXOG VWLOO EH LQ WKH NH\ RI &PDMRU PRVWO\ EXW ZLWK RQH FKRUG WKDW EHORQJV WR &PLQRU NH\ LQVWHDG DQG WKDW ZRXOG EH)P FKRUG &0DMRU DQG &PLQRU DUH SDUDOOHO PRGHV DQG WKXV ZH KDYH VLPSO\ ERUURZHG D FKRUG IURP D SDUDOOHO DHROLDQ PRGH QDWXUDO PLQRU VFDOH LQ WKLV FDVH &PLQRU 7KLV ERUURZHG FKRUG LQ WKH HFODVVLFDO YLHZ LV DOVR FRQVLGHUHG DQ DOWHUHG FKRUG EHFDXVH WKH PDMRU QRWH RI WKH)FKRUG)$& KDV EHHQ ORZHUHG E\ D VHPLWRQH WR $E WKXV FUHDWLQJ DQ DOWHUHG)PDMRU FKRUG LQ WKH FRQWH[W RI WKH RULJLQDO NH\

,Q WKH PRUH PRGHUQ † MD]]YLHZ DOWHUHG FKRUGV DUH DV ZH KDYH GHVFULEHG WKHP VR IDU +HUH WKH DOWHUHG FKRUGV KDYH GLIIHUHQW DOWHUDWLRQV WKDW PRVW RI WKH WLPH GRQ·W EHORQJ WR WKH RULJLQDO NH\ EXW VRPHWLPHV WKH\ GR)RU H[DPSOH LQ RXU SUHYLRXV SURJUHVVLRQ ZH FDQ DOWHU WKH)PDM VR WKDW LW LV

&PDM † $P †)PDM † *

7KLV)0DM FKRUG FRQVLVWV RI WKH QRWHV)$&(% DOO RI ZKLFK DUH IRXQG LQ WKH NH\ RI &PDMRU ,Q WKH FODVVLFDO YLHZ WKLV ZRXOG QRW EH FRQVLGHUHG DV DQ DOWHUHG FKRUG ZKLOH LQ WKH PRGHUQ MD]]YLHZ WKLV LV GHILQLWHO\ DQ DOWHUHG FKRUG .HHS LQ PLQG WKLV GLVWLQFWLRQ DQ\WLPH \RX XVH DOWHUHG FKRUGV

$OWHUHG +DUPRQ\ † +RZ $OWHUHG &KRUGV DUH 8VHG DQG :KHUH 'R 7KH\ &RPH)URP

5HPHPEHU RXU ZHLUG IULHQG WKH $OWHUHG VFDOH" 7KLV VFDOH LV \RX GRQ·W UHPHPEHU LV WKH WK PRGH RI WKH PHORGLF PLQRU VFDOH $OWHUHG VFDOH LV XVHIXO IRU PDQ\

UHDVRQV DQG MD]] SOD\HUV LQ SDUWLFXODU OLNH WR XVH LW WR SOD\ PRUH VRSKLVWLFDWHG
FKRUGV DQG OHDG OLQHV RYHU WKRVH FKRUGV

&KURPDWLF DOWHUDWLRQV DUH PRVW RIWHQ GRQH RQ D GRPLQDQW FKRUG WKDW UHVROYHV WR
WKH PRVW VWDEOH FKRUG LQ D FKRUG SURJUHVVLRQ 7KLV FKRUG LQ WKH FRQWH[W RI FKRUG IXQFWLRQV LQ SURJUHVVLRQV ZKLFK ZH KDYH \HW WR JR RYHU LV FDOOHG IXQFWLRQLQJ GRPLQDQW FKRUG %HFDXVH WKH SXUSRVH RI WKLV FKRUG LV WR DGG WHQVLRQ ZH RIWHQ DGG HYHQ PRUH WHQVLRQ DQG GUDPD E\ DOWHULQJ LW ZLWK DOWHUHG QRWHV 5HVROYLQJ WKLV
DOWHUHG GRPLQDQW FKRUG WR WKH QH[W FKRUG ZKLFK LV VWDEOH SURGXFHV D YHU\
SOHDVDQW CFRPLQJKRPH ‐ W\SH RI VRXQG

<RX FDQ DOVR SOD\ OHDG OLQHV RYHU WKLV DOWHUHG GRPLQDQW FKRUG DQG XVH DOWHUHG
VFDOH VSHFLILFDOO\ RYHU WKDW FKRUG EHIRUH LW UHVROYHV 7KLV ZLOO UHVXOW LQ VRPH YHU\
VRSKLVWLFDWHG OHDG OLQHV WKDW QHYHU VRXQG RUGLQDU\ † OLQHV ZKLFK MD]] SOD\ HUV
RIWHQ XVH LQ WKHLU VROR

R	3	b7

6R OHW ‐V VHH KRZ WR EXLOG WKH UHOHYDQW DOWHUHG VFDOH IURP D GRPLQDQW FKRUG OHW ‐V
VD\ &

& FKRUG KDV WKH QRWHV

C	Db	D#	E	Gb	G#	Bb
R	b9	#9	3	b5	#5	b7

1RZ ZH ‐UH JRLQJ WR DGG DOO RI WKH DOWHUHG QRWHV WKDW DUH SRVVLEOH IRU D GRPLQDQW
FKRUG E E VDPH DV VDPH DV E 1RWH WKDW ZH H[FOXGH WKH *LQ WKLV FDVH EHFDXVH WKDW LV RQH RI WKH QRWHV ZH ‐UH JRLQJ WR DOWHU ZLWK E DQG

1RZ ZH KDYH	Db	Eb	Fb	Gb	Ab	Bb
R	b9	#9	3	b5	#5	b7

1RZ WKH VFDOH ZH JRW E\ DGGLQJ WKH DOWHUHG QRWHV ORRNV YHU\ PHVV\ :H ZLOO WLG\

LW XS XVLQJ HQKDUPRQLF HTXLYDOHQWV VR WKDW ZH FDQ DUUDQJH DOO QRWHV LQ
DOSKDEHWLFDO RUGHU

:KDW ZH KDYH FUHDWHG QRZ HVVHQWLDOO\ LV WKH &DOWHUHG VFDOH 6LQFH WKLV VFDOH LV
WKH WK PRGH RI WKH PHORGLF PLQRU VFDOH ZH NQRZ WKDW LW LV RQO\ D VHPLWRQH EHORZ WKH SDUHQW PHORGLF PLQRU VFDOH RI WKLV PRGH 7KLV PHDQV WKDW WKH SDUHQW PHORGLF PLQRU VFDOH RI DQ DOWHUHG VFDOH LV IRXQG RQ LWV GHJUHH ,Q WKH NH\ RI & WKDW ZRXOG EH 'E 6R WKH SDUHQW PHORGLF PLQRU VFDOH RI & DOWHUHG LV 'E PHORGLF PLQRU DQG & DOWHUHG LV WKH PRGH RI 'E PHORGLF PLQRU

3DUHQW PHORGLF PLQRU VFDOH LV YHU\ HDV\ WR ILJXUH RXW LQ WKLV FDVH † \RX MXVW KDYH WR ORRN RQH VHPLWRQH DERYH WKH URRW RI D GRPLQDQW FKRUG WR ILQG LW)RU H[DPSOH SDUHQW PHORGLF PLQRU VFDOH RI *DOWHUHG VFDOH EXLOW RXW RI * FKRUG LV $E PHORGLF PLQRU : K \ ZRXOG \RX ZDQW WR GR WKLV" :HOO WKLV LV YHU\
FRQYHQLHQW EHFDXVH LW LV XVXDOO\ HDVLHU WR WKLQN DQG YLVXDOL]H WKH VFDOH LQ WKH
FRQWH[W RI D PHORGLF PLQRU UDWKHU WKDQ DQ DOWHUHG VFDOH

1RWH WKDW WKLV LV RQO\ GRQH LQ SUDFWLFH RQ GRPLQDQW V\SHFKRUGV EHFDXVH WKH\ DKDYH VSHFLILF IXQFWLRQ LQ D SURJUHVVLRQ ZKLFK LV WR EXLOG XS WHQVLRQ ULJKW EHIRUH LW JHWV UHVROYHG

+DYH \RX QRWLFHG ZKLFK QRWHV ZHUH OHIW XQFKDQJHG E\ WKH DOWHUDWLRQV ZH KDG DERYH" ,W ¶V WKH 0 (DQG E %E ,ZH KDG DOO QRWHV XQDOWHUHG ZH ZRXOG JHW

'R \RX UHPHPEHU ZKLFK VFDOH WKLV LV"

,W ¶V WKH 0L[RO\GLDQ PRGH ,W LV DOVR VRPHWLPHV UHIHUUHG WR DV WKH 'RPLQDQW VFDOH EHFDXVH LW FRQWDLQV WKH 5RRW 0 DQG P DOO RI ZKLFK DUH D PXVW KDYH LQ D GRPLQDQW FKRUG :KDW DOWHUHG VFDOH HVVHQWLDOO\ GRHV LV LW DOWHUV DOO QRQ HVVHQWLDO
QRWHV LQ D GRPLQDQW VFDOH H[FHSW IRU DQG E 7KDW ¶V ZK\ DOWHUHG VFDOH ZRUNV EHVW DQG LV PRVW RIWHQ XVHG RYHU GRPLQDQW FKRUGV

0DMRU DQG PLQRU W\SH DOWHUHG FKRUGV KDYH WKHLU XVHV WRR EXW WKHVH DUH PXFK
UDUHU 7KH\ DUH XVHG PRVWO\ WR SURGXFH PRUH H[RWLF GLIIHUHQW FRORU VRXQGV WKDW VSLFH XS D SURJUHVVLRQ LQ DQ LQWHUHVWLQJ ZD\ XVXDOO\ DV CERUURZHG FKRUGV ¶I LI WKH\ DUH RXW RI NH\

&KRUGV%XLOW LQ WKV

1RW DOO WUDGV KDYH WR EH EXLOW IURP VWDFNHG UGV :H ¶YH DOUHDG\ VHHQ WKDW LQ WKH EDVH RI VXSHQVLRQ WKHUH DUH RWKHU LQWHUYDOV WKV DQG WKDW DUH VWDFNHG RQ WRS RI RQH DQRWKHU ,W LV SRVVLEOH HYHQ WR EXLOG WUDGV IURP WKH JURXQG IORRU EDVLQJ WKHP ERPSOHWHO\ RQ D QRQ UG LQWHUYDO 8VXDOO\ WKLV LV GRQH ZLWK WKVH ,Q EDVHV FKRUGV DUH EXLOW E\ VWDFNLQJ 3HUIHFW IODW VKDUS LQ ZD\V WR PDNH WUDGV RU TXDGDGV

7KH UHVXOWLQJ FKRUGV †† XVXDOO\ XVHG LQ MD]] DQG PRGHUQ FODVVLFDO PXVLF †† FRQVLVW LQ JHQHUDO RI URRWV DQG DQG WKH\ KDYH TXLWH GLVWLQFW VRXQGV DQG VHUYH TXLWH GLVWLQFW IXQFWLRQV & TXDGDG EXLOW LQ ZRXOG EH

C	D	E	F	G	A	B	C	D	E	F	G	A	B	C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

7KHVH FKRUGV FDQ EH XVHG LQ SODFH RI RU LQ DGGLWLRQ WR EDVHG FKRUGV WR DFKLHYH DYDULHW\ RI HIIHFWV EXW WKDW XVXDOO\ PHDQV PRYLQJ LQWR WKH UHDOP RI VRPH YHU\ DGYDQFHG KDUPRQ\

/HW ¶V QRZ VKLIW JHDUV IRU D OLWWOH ELW DQG H[SODLQ LQ PRUH GHWDLO FKRUGV UHODWLRQVKLS WR VFDOHV

+RZ &KRUGV &RPH IURP 6FDOHV

$V ZH NQRZ E\ QRZ FKRUGV FRPH IURP VFDOHV 7KH\ DUH JHQHUDWHG E\ VFDOHV DQG DUH OLWHUDU\ PDGH XS RI QRWHV IURP WKH VFDOH WKH\ FRPH IURP :KDW WKLV PHDQV LV WKDW D JLYHQ VFDOH ZLOO LPSO\ D FHUWDLQ OLVW RI FKRUGV WKRVH FKRUGV DOO EHLQJ LQ WKH VDPH NH\ DV WKDW VFDOH

&KRUGV WKDW FRPH IURP D PDMRU GLDWRQLF VFDOH DUH FDOOHG GLDWRQLF FKRUGV (DFK PDMRU VFDOH NH\ UHPHPEHU †† QRWHV VR NH\V KDV LWV RZQ VHW RI VHYHQ FKRUGV †† DOO RI WKRVH FKRUGV EHJLQ DQG DUH EXLOW RQ D GLIIHUHQW VFDOH QRWH

)LJXULQJRXWDOOWKHFKRUGVLQDPDMRUNH\LVVLPSOH/HW'HVVD\WKDWZHZDQWWR ILJXUHRXWDOOWKHFKRUGVWKDWDUHLQWKHNH\RI&PDMRU)LUVWZHQXPEHUD& PDMRUVFDOHDQGJRDOLWWOHELWEHORQGDQRFWDYHXSWRWKH

1	2	3	4	5	6	7	8	9	10	11	12	13
C	D	E	F	G	A	B	C	D	E	F	G	A

&KRUGVDVZHNQRZE\QRZDUHPRVWRIWHQEXLOWLQWKLUGVVR ZHZLOOVLPSO\ EHJLQE\VWDFNLQJWKLUGVMXVWDVEHIRUH:HZLOOVWDUWE\DGGLQJWKH DQGWKH QRWHRQHDFKVFDOHGHJUHH

7KLVZLOOUHVXOWLQJHWWLQJ GLIIHUHQWVHWVRI QRWHV DQGWKHQZHKDYHWRDQDO\]H ZKDWFKRUGWKRVHQRWHVPDNHXS)RUH[DPSOH ILUVWQRWHLQ&PDMRUVFDOHLV& :KHQ\RX DGG WKH UG DQG WKH WK QRWH WR LW \RX JHW WKH QRWHV & (* 6HFRQG QRWHLQ&PDMRULV' DWHUDGGLQJWKH DQGWKH FRXQWLQJIURP'DVWKHILUVW QRWH \RX JHW ') $ HWF

Scale degree	R	3	5
1	C	E	G
2	D	F	A
3	E	G	B
4	F	A	C
5	G	B	D
6	A	C	E
7	B	D	F

7DEOH 6WDFNHGWKLUGVLQ&PDMRUVFDOH

1RZZHQHHGWR DQDO\]H WKHVH JURXSV RI QRWHV DQG VHH ZKLFK FKRUG TXDOLW\ WKH\PDNHXS

+RZWR $QDO\]H 'LDWRQLF &KRUGV

7KHILUVWJURXSRIQRWHVZHKDYHLV & (* :KHQZHKDYHDJURXSRIQRWHVOLNHWKLVDQGZHZDQWWRILJXUHRXWZKDWFKRUGLWLVZH VWDUWE\FRPSDULQJWKHQRWHVWRWKHPDMRUVFDOHRIWKHERWWRPORZHVWQRWH

,QWKLVFDVH &(* LW ¶V & VRZHWDNHDORRNDWWKH&PDMRUVFDOH :HVHHWKDWWKHVHQRWHV DUHDOOIRXQGLQWKH&PDMRUVFDOH ++ WKH\¶UHWKH WK DQG

:HNQRZWKDWFKRUGZKLFKKDV FKRUGIRUPXOD LV D PDMRUFKRUG VRWKLVPXVWEH& 0DMRUFKRUGILJXULQJRXWWKLVFKRUGLVSUHWW\REYLRXV

1H[WJURXSRIQRWHVLV ') $ $JDLQZHVWDUWE\FKHFNLQJDQGFRPSDULQJWKHQRWHVWRWKHPDMRUVFDOHRIWKHERWWRP QRWH ,QWKLVFDVHLW¶V' VRZHFKHFNWKH'PDMRUVFDOH

D (1)	E (2)	F# (3)	G (4)	A (5)	B (6)	C# (7)	D (8)

1RZZHFDQVHHWKDW'LVWKH5RRWQRWHDQG$LVWKH QRWHEXW) ++ WKH QRWHLQRXU FKRUG + LVQRWIRXQGLQD'PDMRUVFDOH

,QVWHDGZHKDYH) 7KLVWHOOVXVWKDWRXUQRWH) LVIODWWHGE\DVHPLWRQH DKDOIVWHS GRZQRQWKHQRWHFLUFOH :KHQZHVWDFNWKLUGV LQD'PDMRUVFDOH ZHJHW WKH QRWHVRI D'PDMRUFKRUG ') $ EXW VLQFH RXU QRWHLV) LW PHDQVWKDWRXUFKRUG IRUPXODVHTXHQFHLVDFWXDOO\ E

$QG ZKDW NLQG RI FKRUG KDV D IRUPXOD E "

0LQRUFKRUG RIFRXUVH 6R WKLVPXVWEH'PLQRUWKHQ

1H[WJURXSRIQRWHVLV (* %

:HFKHFNWKH(PDMRUVFDOHDQGUHSHDWH[DFWO\WKHVDPHSURFHVV ,Q(PDMRUWKH QRWHV DUH (* % 6LQFH RXU LV* LW PHDQV WKDW DJDLQ WKLV QRWH LV IODWWHGE\DVHPLWRQH DQGWKH IRUPXODVHTXHQFH IRU(*%LV E 7KLVWHOOV XV WKDW WKH FKRUG LV DQRWKHU PLQRU FKRUG DQG LW¶V (PLQRU LQ WKH NH\ RI & PDMRU

, ¶OO OHW\RX ILJXUH RXW WKH FKRUG IRU WKH QH[W WKUHH QRWHJURXSV)$ & *%' $ & (

<RX MXVW KDYH WR IROORZ WKH VDPH SURFHVV DV GHVFULEHG IRU WKH ILUVW WZR QRWH
JURXSV

,I\RX KDYH DQ\WURXEOH DOLWWOH ELW IXUWKHU LQ WKLV VHFWLRQ WKHUH ZLOO EH D FRPSOHWH
OLVW ZLWK DOO &PDMRUVFDOH FKRUGV VR\RX FDQ FKHFN WR PDNH VXUH\RX JRW LW ULJKW

,MXVW ZDQWHG WR H[SODLQ WKH ODVW JURXS RI QRWHV VWDUWLQJ RQ WKH GHJUHH RI
& PDMRUVFDOH ++ %')

:KHQ ZH FKHFN WKH PDMRU VFDOH RI WKH ERWWRP QRWH

B	C#	D#	E	F#	G#	A#

†† ZH FDQ VHH WKDW ERWK WKH UG ' DQG WKH WK) LQ RXU QRWH JURXS DUH D VHPLWRQH ORZHU WKDQ WKH UG DQG WKH WK LQ WKH % PDMRU VFDOH 7KLV PHDQV WKDW LQVWHDG RI ZH KDYH E E

'R \RX UHPHPEHU ZKDW W\SH RI FKRUG KDV WKLV NLQG RI IRUPXOD"

<RX ¶YH JXHVVHG LW †† LW ¶V D GLPLQLVKHG RQH

$VVHPEOLQJ 'LDWRQLF &KRUGV

7R VXPPDUL]H ZKDW ZH KDYH VR IDU KHUH ¶V D OLVW RI FKRUGV WKDW ZH ¶YH JRW E\ DQDO\]LQJ WKH QRWHV

Scale degree	R	3	5	Chord
1	C	E	G	C major
2	D	F	A	D minor
3	E	G	B	E minor
4	F	A	C	F major
5	G	B	D	G major
6	A	C	E	A minor
7	B	D	F	B diminished

7DEOH 'LDWRQLF FKRUGV LQ & PDMRU VFDOH

(DFK NH\ RI WKH PDMRU VFDOH SURGXFHV 0DMRU FKRUGV PLQRU FKRUGV DQG KDV RQH GLPLQLVKHG FKRUG ZKLFK VWDUWV RQ WK VFDOH GHJUHH

7KHUH LV UHDOO\ RQO\ RQH GLIILFXOW\ ZLWK DOO WKLV DQG LW ¶V WKDW LQ WKH UHDO ZRUOG WKH QRWHV DUH QRW DOZD\V JLYHQ LQ WKLV FRUUHFW WUDGLWLRQDO

6RPHWLPHV D FKRUG LQYHUVLRQ LV XVHG ZHWDONDERXW WKRVH QH[W ZKHUH WKH URRW QRWH LV QRW WKH ORZHVW QRWH LQ D FKRUG

)RU H[DPSOH \RX FDQ KDYH QRWHV)$' DQG LW PLJKW VHHP FRQIXVLQJ WR ILJXUH RXW WKH FKRUG ,W FDQ EH PDQ\GLIIHUHQW WKLQJV EXW WKLV LV VLPSO\ WKH LQYHUVLRQ RI ' PLQRU ') $

+HUH ¶V DQRWKHU H[DPSOH %* (&DQ \RX JXHVV WKLV FKRUG" ,W ¶V (PDMRU EXW ZLWK WKH UHYHUVH QRWH RUGHU

5HFRJQL]LQJ WKHVH FKRUGV E\ WKHLU QRWHV HYHQ ZKHQ WKH\ ¶UH LQ DQ LQYHUVLRQ LV VRPHWKLQJ\RX ¶UH JRLQJ WR EHFRPH EHWWHU DW DV\RXJDLQ PRUH H[SHULHQFH SODLQJ DQG ILJXULQJ VWXII RXW E\\RXUVHOI

*RRG VWDUW LV WR JHW XVHG WR WKH FRPPRQ FKRUG QRWH JURXSV VR WKDW ZKHQ\RX VHH RQH ZLWK D GLIIHUHQW QRWH RUGHU\RX FDQ LQVWDQWO\ UHPHPEHU ZKDW FKRUG WKDW LV

7KH FRPPRQ RQHV DUH &(* & FKRUG *%' *)$&) $&($P (*% (P ') $ ' $& ($ %') % (* % (%E') %E %') %P ') $ 'P

,Q D PRUH DGYDQFHG KDUPRQ\ ZKHUH PRUH FRPSOH[FKRUGV ZLWK PRUH QRWHV DUH XVHG LW ZLOO EH KDUGHU WR GR WKLV EHFDXVH VRPH QRWHV FDQ EH OHIW RXW 7KLV FDQ
FUHDWH D ORW RI FRQIXVLRQ DV WR ZKDW W\SH RI FKRUG LW LV EXW WKHUH DUH PHWKRGV WR
ILJXUH RXW HYHQ WKRVH LW ¶V MXVW D OLWWOH ELW PRUH FRPSOLFDWHG

&RPLQJ EDFN WR RXU VFDOH FKRUG \RX KDYH WR UHPHPEHU WKDW HYHU\ PDMRU VFDOH NH\ ZLOO SURGXFH WKLV VDPH VHTXHQFH RI FKRUG TXDOLWLHV

+HUH LV WKH PDMRU VFDOH WULDG FKRUG VHTXHQFH

Maj	min	min	Maj	Maj	min	dim
I	ii	iii	IV	V	vi	vii

7KLV VHTXHQFH QHHGV WR EH PHPRUL]HG (DFK PDMRU NH\ ZLOO SURGXFH WKLV VDPH VHTXHQFH RI WULDG FKRUGV

1RWH WKDW VFDOH GHJUHHV DUH XVXDOO\ ZULWWHQ LQ URPDQ QXPHUDOV 7KLV LV LPSRUWDQW
EHFDXVH RI WKH FKRUG SURJUHVVLRQV ZH ¶UH JRLQJ WR WDONDERXW ODWHU

7KH GLDWRQLF TXDGDGV FKRUG VHTXHQFH LV VLPLODU EXW ZLWK D OLWWOH ELW GLIIHUHQW
FKRUG TXDOLWLHV

Maj7	min7	min7	Maj7	(Dom)7	min7	min7b5
I	ii	iii	IV	V	vi	vii

:HNQRZ WKDW WKHMH TXDGDGV DUH WKH FKRUGV \RX JHW DWWHU DGGLQJ DQRWKHU WKLQG RQ WRS RI WULDG FKRUGV <RX FDQ HDVLO\ ILJXUH RXW WKH GLDWRQLF TXDGDGV RQ \RXU RZQ DQG FRPH XS ZLWK WKH VDPH FKRUGV DV LQ WKLV VHTXHQFH -XVW LQ FDVH LI \RX QHHG DQ\KHOS OHW "V GR LW WRJHWKHU IRU WKH 9 FKRUG 'RPLQDQW DQG IRU WKH YLL FKRUG PLQE EHFDXVH ZH KDYHQ "W WKDG WKHP LQ GLDWRQLF WULDGV

'RPLQDQW FKRUG LV WKH FKRUG ZH JHW LI VWDFN WKH WKLUGV VWDUWLQJ IURP WKH VFDOH GHJUHH ,Q WKH FDVH RI &0DMRU VFDOH WKH GHJUHH LV * VR ZH EXLOG RXU GRPLQDQW FKRUG RQ WRS RI WKLV QRWH :H WDNH WKH DQG IRXU QRWHV EHFDXVH LW LV D TXDGDG FKRUG EXW VWDUWLQJ IURP WKH *QRWH :H JHW WKH QRWHV * % 'DQG) 7KHQ ZH FKHFN WKH *PDMRU VFDOH DQG VHH WKDW *LV WKH 5RRW %LV WKH 0DMRU 'LV WKH 3HUIHFW EXW WKH QRWH LV) DQG ZH KDYH) 7KLV PHDQV WKDW WKH QRWH LV IODWWHG E\ D VHPLWRQH DQG ZKDW ZH KDYH LV WKH FKRUG IRU D 'RPLQDQW FKRUG E

,Q TXDGDG IRUP PLQE LV WKH FKRUG ZH JHW ZKHQ ZH VWDFN WKH WKLUGV VWDUWLQJ IURP WKH PDMRU VFDOH GHJUHH ,I ZH GR WKLV LQ WKH NH\ RI &PDMRU ZH JHW WKH QRWHV % ') DQG $ 7KHQ ZH FKHFN WKHVH QRWHV LQ % PDMRU VFDOH † % LV WKH 5RRW ' WKH WKLUG ZH KDYH ') LV WKH ZH KDYH) DQG $ LV WKH ZH KDYH $ 6R DOO QRWHV DWWHU WKH URRW KDYH EHHQ IODWWHG E\ D VHPLWRQH 7KLV PHDQV WKDW WKH FKRUG IRUPXOD IRU WKLV FKRUG LV E E DQG E ,Q WULDG IRUP WKLV ZDV D GLPLQLVKHG FKRUG RU KDOI GLPLQLVKHG WR EH SUHFLVH EXW ZKHQ ZH DGG DQRWKHU WKLUG RQ WRS LW EHFRPHV PLQE

1RWH WKDW RXU GLPLQLVKHG RU IXOO GLPLQLVKHG FKRUG ZLWK WKH IRUPXOD E E EE LV QRW D GLDWRQLF FKRUG EHFDXVH LW GRHVQ "W DSSHDU LQ WKLV GLDWRQLF VHTXHQFH RI
QRWH FKRUGV

:H FDQ GR WKLV H[DFW SURFHVV WR ILJXUH RXW WKH FKRUGV WKDW DUH IRXQG LQ D PLQRU 6FDOH EXW ZH GRQ "W KDYH WR :HNQRZ WKDW PLQRU VFDOH LV VLPSO\ WKH PRGH RI D PDMRU VFDOH VR DOO ZH KDYH WR GR LV WDNH WKH PDMRU VFDOH FKRUG VHTXHQFH DQG UH
RULHQW LW VR WKDW ZH VWDUW IURP WKH YL FKRUG

%\GRLQJVRZHJHWWKHPLQRUVFDOHWULDGFKRUGVHTXHQFH

min	dim	Maj	min	min	Maj	Maj
i	ii	III	iv	v	VI	VII

,QWKHNH\RI$PLQRU WKH$^{WK} PRGHRI&PDMRU WKDWZRXOGEH

$PLQ L %GLP LL &0DM ,,, 'PLQ LY (PLQ Y)0DM 9, *0DM 9,,

<RX FDQ DSSO\ WKLV PLQRU FKRUG VHTXHQFH WR DQ\ QDWXUDO PLQRU NH\ DQG \RX ZRXOGJHWWKHFKRUGVLQWKDWNH\

0LQRUTXDGGDGVVHTXHQFHIROORZVWKHVDPHORJLF

min7	min7b5	Maj7	min7	min7	Maj7	(Dom)7
i	ii	III	iv	v	VI	VII

/DVWO\ NHHSLQPLQGWKDWWKLVLVQRWWKHRQO\ZD\WR DVVHPEOHFKRUGVWKDWVRXQG JRRGWRJHWKHU DQGYHU\RIWHQLPSURYLVRUV DQGFRPSRVHUVXVHFKRUGVWKDWDUHQRW UHODWHGGLDWRQLFDOO\RUQRWJHQHUDWHGE\DGLDWRQLF VFDOH EXWLWLVRQHHDV\ ZD\WR NQRZDQGHQVXUHWKDWZKDW\RX SOD\ZLOOVRXQGJRRG

7UDQVSRVLQJ IURP 2QH .H\ WR $QRWKHU

7KH QHFHVVLW\ WR SOD\ LQ D EXQFK RI GLIIHUHQW NH\V LV QRW XQFRPPRQ IRU D PXVLFLDQ %HLQJDEOH WR FKDQJH NH\VRQ WKH VSRWLVDUHDOO\XVHIXO VNLOOWR KDYH IRU D YDULHW\ RI UHDVRQV †† HVSHFLDOO\ LI \RX ZDQW WR SOD\ FKRUGV RQ \RXU LQVWUXPHQW

2WHQ WLPHV WKH UHDVRQ ZH GR WKLV LV EHFDXVH ZH ZDQW WR SOD\ LQ D NH\ ZKLFK EHWWHU VXLWV D VLQJHUV YRLFH GRHVQ¶W PDWWHU LI ZH VLQJ RU VRPHRQH HOVH RU LW PLJKW EH MXVW PRUH FRQYHQLHQW WR SOD\ LQ D FHUWDLQ NH\GHSHQGLQJ RQ D VLWXDWLRQ

,Q DQ\FDVH KDYLQJ WKLV VNLOO LV TXLWH XVHIXO DQG LPSRUWDQW HVSHFLDOO\ LI \RX DUH SOD\LQJ LQ D EDQG

/XFNLO\ VLQFH \RX QRZ NQRZ WKH VHTXHQFH RI FKRUGV WKDW HDFK PDMRU VFDOH SURGXFHV VZLWFKLQJ IURP RQH NH\ WR DQRWKHU LV YHU\ TXLFN DQG HDV\

,I ZH KDYH D FKRUG VHTXHQFH SOD\LQJ IRU H[DPSOH & †† $P †† (†† * ZH ILJXUH RXW WKDW WKHVH DUH WKH , †† YL 9 †† 9 ,†† FKRUGV RI WKH &PDMRU NH\

,I ZH ZDQW WR VZLWFK NH\V WR * ILUVW ZH QHHG WR ILJXUH RXW WKH FKRUGV LQ WKH NH\ RI * DQG WKHQ DSSO\ WKLV FKRUG SURJUHVVLRQ

* PDMRU VFDOH LV * $ % & ' ( )

$IWHU DSSO\LQJ WKH IRUPXOD 0DM PLQ PLQ 0DM 0DM PLQ GLP ZH JHW WKH IROORZLQJ FKRUGV

* 0DM , $ PLQ LL % PLQ LLL & 0DM ,9 ' 0DM 9 (PLQRU YL) GLP YLL

7KHQ DOO ZH KDYH WR GR LV DSSO\ WKH , †† YL 9 †† 9 ,†† FKRUG VHTXHQFH WR WKH NH\ RI * DQG ZH JHW WKH FKRUGV * †† (P †† & †† '

6R ZKDW ZDV & †† $P †† (†† * LQ WKH NH\ RI & LV QRZ * †† (P †† & †† ' LQ WKH NH\ RI *

7KLV FDQ EH GRQH LQ DOO NH\V DQG ZLWK DQ\ FKRUG SURJUHVVLRQ

&KRUG ,QYHUVLRQV DQG &KRUG 9RLFLQJV

7KH DUUDQJHPHQW RI QRWHV LQ D FKRUG LV FDOOHG D FKRUG YRLFLQJ ,W UHSUHVHQWV WKH RUGHU DQG WKH IUHTXHQF\ E\ ZKLFK WKH QRWHV DSSHDU LQ D FKRUG ZKHQ ZH SOD\ LW %\ IUHTXHQF\ , PHDQ KRZ PDQ\ WLPHV WKH QRWHV DUH UHSHDWHG LQ D FKRUG WKDW LV SOD\HG

)RU H[DPSOH DQ (0DMRU WULDG FRQVLVWV RI WKH QRWHV (* % 7KLV LV DQ H[DPSOH RI D EDVLF FKRUG YRLFLQJ 7KH QRWHV DUH JRLQJ IURP ORZHU WR KLJKHU LQ RUGHU VR WKDW († WKH 5RRW LV WKH ORZHVW QRWH * LV WKH 0DMRU [6] DQG KLJKHU LQ SLWFK WKDQ

(DQG % † WKH 3HUIHFW[WK] LV WKH KLJKHVW QRWH LQ WKLV YRLFLQJ +RZHYHU VRPHWLPHV ZH FDQ SOD\ D FKRUG LQ ZKLFK WKH RUGHU RI WKH QRWHV LV GLIIHUHQW WKDQ WKLV RQH VR WKDW IRU H[DPSOH ZH FDQ KDYH (%* DQG LW PD\ QRW EH REYLRXV DW ILUVW WKDW WKLV LV VWLOO DQ (PDMRU WULDG EXW ZLWK D GLIIHUHQW YRLFLQJ (5RRW LV VWLOO WKH

ORZHVW QRWH EXW QRZ* 0DMRU[UG] LV WKH KLJKHVW QRWH LQ WKLV YRLFLQJ

7KLV LV RIWHQ WKH FDVH RQ JXLWDU ZKHUH D FKRUG FDQ KDYH PDQ\ GLIIHUHQW VKDSHV DQG ZD\V LW FDQ EH SOD\HG HDFK ZLWK D GLIIHUHQW FKRUG YRLFLQJ DQG DOVR GLIIHUHQW ILQJHULQJ FKRLFHV ,I ZH WDNH RXU (PDMRU WULDG DJDLQ DQG SOD\ LW RQ JXLWDU DV D EDVLF RSHQ FKRUG VKDSH ZH FDQ VHH WKDW WKH RUGHU RI WKH QRWHV SOD\HG IURP ORZHVW WR KLJKHVW LV (5 % 3 (2FWDYH * 0 % 3 ('RXEOH 2FWDYH 7KLV LV DQ H[DPSOH RI D FKRUG YRLFLQJ ZKHUH (QRWH DSSHDUV WLPHV LQ RFWDYHV % 3 DSSHDUV WZLFH DQG WKH * 0 DSSHDUV RQO\ RQFH

:H FDQ VHH WKDW RQH FKRUG FDQ KDYH PDQ\ GLIIHUHQW YRLFLQJV DQG URRW LV DOZD\V WKH EDVV ORZHVW QRWH %XW WKHUH DUH VSHFLDO FDVHV ZKHQ LW ¶V QRW

0RVW DOO FKRUGV DUH WKLUG EDVHG 7KH JHQHUDO IRUP RI D FKRUG LV VXFK WKDW LW FRQWDLQV D URRW IROORZHG E\ D VHULHV RI VWDFNHG WKLUGV PDMRU RU PLQRU WKDW FUHDWH
WKH TXDOLWLHV RI WKDW FKRUG ,W LV SRVVLEOH KRZHYHU WR SURGXFH FKRUGV WKDW GRQ ¶W
KDYH WKLV VWUXFWXUH EXW DUH VWLOO EDVHG RQ WKLUGV

7KLV LV GRQH E\ UHDUUDQJLQJ WKH QRWHV RI D VWDFNHG WKLUG FKRUG LQ D ZD\ VR WKDW WKH ORZHVW QRWH LQ WKH FKRUG ¨ WKH EDVV QRWH ¨ LV QR ORQJHU WKH URRW QRWH
XVXDOO\ WKDW PHDQV WKDW WKH URRW QRWH LV FRQWDLQHG HOVHZKHUH LQ WKH FKRUG 7KHVH
FKRUGV DUH FDOOHG Δ,QYHUVLRQV ◊

(VVHQWLDOO\ ZH FDQ VD\ WKDW D FKRUG LQYHUVLRQ LV YRLFLQJ D FKRUG QRWH RWKHU WKDQ WKH URRW DV LWV ORZHVW QRWH

7KH VLPSOHVW LQYHUVLRQV DUH WULDG LQYHUVLRQV EHFDXVH WKRVH DUH WKH VLPSOHVW
FKRUGV)RU DQ\ WULDG VLQFH WKHUH DUH WKUHH GLVWLQFW QRWHV WKHUH DUH WZR GLVWLQFW
LQYHUVLRQV WKDW FDQ EH SURGXFHG LQ DGGLWLRQ WR WKH RULJLQDO FKRUG LQ ZKLFK WKH URRW QRWH LV WKE EDVV QRWH

0DMRU 7ULDG ,QYHUVLRQV

&0DMRUWULDGFRQWDLQVWKHQRWHV&(DQG*7KH&LVWKHQWKHFKRUG¬1VURRWDQG PRVWRIWHQ LWVEDVQRWH ,QWKDWFDVH WKHFKRUGLVQRWLQLQYHUVLRQ

7KH ILUVW LQYHUVLRQ RI WKH & PDMRU WULDG FRQWDLQV WKH VDPH QRWHV EXW QRZ WKH (0DMRU UG LV WKH FKRUG ¬V EDVV QRWH 0RVW FRPPRQO\ WKH FKRUG LV SODFHG LQ WKH QRWH RUGHU (* & 7KLV QHZ FKRUG UHODWLYH WR LWV QHZ EDVV QRWH (FRQWDLQV D PLQRU UG * DQG D PLQRU WK &

7KH VHFRQG LQYHUVLRQ RI D & PDMRU WULDG KDV * 3HUIHFW WK DV LWV EDVV QRWH ,W LV JHQHUDOO\ SODFHG * & (LQ WKDW RUGHU DQG FRQWDLQV UHODWLYH WR LWV EDVV QRWH * 3HUIHFW WK & DQG D 0DMRU WK (

0LQRU 7ULDG ,QYHUVLRQV

0LQRU WULDG LQYHUVLRQV IROORZ WKH VDPH UXOHV DV PDMRU WULDG LQYHUVLRQV

$Q $ PLQRU WULDG $ & (LQ ILUVW LQYHUVLRQ LV JHQHUDOO\ SODFHG & ($ DQG FRQWDLQV UHODWLYH WR & DV WKH QHZ EDVV 0DMRU UG DQG D 0DMRU WK ,W ¬V LQWHUHVWLQJ WKDW WKLV FKRUG LQ LQYHUVLRQ LV DFWXDOO\ & 0DMRU EXW ZLWK RXW WKH QRWH & 5 (0 $ 0 ZLWK WKH

,Q VHFRQG LQYHUVLRQ WKH FKRUG LV ($ & DQG UHODWLYH WR (LW FRQWDLQV D 3HUIHFW WK DQG D PLQRU WK

7KH VHYHQWK LQYHUVLRQV ¨ LQ WKH FDVH RI PDMRU DQG PLQRU WULDGV ¨ KDYH VSHFLDO QDPHV

- 7KH ILUVW LQYHUVLRQ RI D PDMRU RU PLQRU WULDG LV FDOOHG D ÷ FKRUG $V ZH KDYH VHHQ WKLV LV EHFDXVH LW ¬V EDVV QRWH LV WKH RULJLQDO WULDG DQG LW FRQWDLQV UHODWLYH WR WKH QHZ EDVV QRWH D UG 0DMRU UG LQ D PLQRU FKRUG LQYHUVLRQ DQG D PLQRU UG LQ D PDMRU FKRUG LQYHUVLRQ DQG D WK 0DMRU WK LQ D PLQRU FKRUG LQYHUVLRQ DQG D PLQRU WK LQ D PDMRU FKRUG LQYHUVLRQ
- 7KH VHFRQG LQYHUVLRQ RI D PDMRU RU PLQRU WULDG LV FDOOHG D ÷ Δ FKRUG VLQFH WKLV FKRUG ZKRVH EDVV QRWH LV D WK FRQWDLQV D WK DQG D WK DERYH WKDW EDVV QRWH 7KLV LQYHUVLRQ HVVHQWLDOO\ JLYHV XV D VXV FKRUG 5 3 0 LQ WKH FDVH RI D PDMRU LQYHUVLRQ DQG DXJPHQWHG VXV WULDG 5 3 $XJ † VDPH DV P LQ WKH FDVH RI D PLQRU LQYHUVLRQ

,QYHUVLRQV RI 'LPLQLVKHG DQG $XJPHQWHG &KRUGV

+HUH ZH KDYH VRPH WKLQJ LQWHUHVWLQJ JRLQJ RQ 'LPLQLVKHG FKRUGV DUH EXLOW RQO\ RXW RI VWDFNHG PLQRU UGV DQG $XJPHQWHG FKRUGV RXW RI VWDFNHG 0DMRU HGV %HFDXVH RI WKDW GLPLQLVKHG DQG DXJPHQWHG FKRUGV DUH FDOOHG V\PPHWULFDO FKRUGV 7KH FRQVHTXHQFH RI WKDW LV WKDW LQYHUWLQJ DXJPHQWHG WULDGV DQG IXOO GLPLQLVKHG FKRUGV UHVXOW LQ PRUH DXJPHQWHG WULDGV DQG IXOO GLPLQLVKHG FKRUGV

,Q RWKHU ZRUGV D IXOO GLPLQLVKHG FKRUG LQ LQYHUVLRQ LV MXVW WKDW VDPH FKRUG UHSHDWHG XS RU GRZQ D PLQRU UG LQWHUYDO VHPLWRQHV /LNHZLVH DQ $XJPHQWHG WULDG FKRUG LQ LQYHUVLRQ LV MXVW WKDW VDPH FKRUG UHSHDWHG XS D 0DMRU UG VHPLWRQHV

1RWH WKDW WKHUH DUH V\PPHWULFDO VFDOHV WRR 6FDOHV VXFK DV D GLPLQLVKHG VFDOH DQG
ZKROH WRQH VFDOH KDYH WKLV NLQG RI VWUXFWXUHV ,Q IDFW WKH ILUVW VFDOH ZH KDG LQ WKLV
ERRN †† WKH &KURPDWLF VFDOH LV DOVR D V\PPHWULFDO VFDOH

,QYHUVLRQV RI WKV DQG ([WHQGHG &KRUGV

,W LV SRVVLEOH WR LQYHUW DQG H[WHQGHG FKRUGV LQ D YDULHW\ RI ZD\V WR HQG XS ZLWK KDUPRQLFDOO\ FRPSOH[FKRUGV)RU DQ\ TXDGDG VLQFH WKHUH DUH GLVWLQFW QRWHV WKHUH DUH WKUHH GLVWLQFW LQYHUVLRQV WKDW IROORZ WKH VDPH ORJLF DV WULDG LQYHUVLRQV LQ ZKLFK WKH 5RRW LV QRW WKH ORZHVW QRWH DQG LWJRHV RQ DV PRUH QRWHV DUH DGGHG

1RUPDO 5RRW SRVLWLRQ 5 †RRW LV WKH ORZHVW QRWH

WV LQYHUVLRQ † UG LV WKH EDVV QRWH DQG 5RRW LV WKH KLJKHVW QRWH

QG LQYHUVLRQ † WK LV WKH EDVV QRWH DQG 5RRW LV WKH VHFRQG KLJKHVW QRWH

UG LQYHUVLRQ † WK LV WKH EDVV QRWH DQG 5RRW LV WKH VHFRQG ORZHVW QRWH

7KHVH FKRUGV PRVW RIWHQ XVHG LQ FRQWHPSRUDU\ FODVVLFDO PXVLF DQG MD]] DUH
XVHIXO IRU PDQ\UHDVRQV PRVW REYLRXVO\ DV VXEVWLWXWLRQ FKRUGV

.HHS LQ PLQG WKDW \RX FDQ KDYH DQ\FKRUG YRLFLQJ PHDQLQJ DQ\QRWH RUGHU LQ D
FKRUG EXW DV ORQJ DV WKH 5RRW LV SRVLWLRQHG DV WKH ORZHVW QRWH WKHQ LW LV QRW
FRQVLGHUHG DQ LQYHUVLRQ

+RZ WR)LQG 5RRW 1RWH 3RVLWLRQ LQ DQ ,QYHUWHG &KRUG

&KRUG YRLFLQJV DUH RIWHQ DUUDQJHG LQ D ZD\ VR WKDW MXVW E\ ORRNLQJ DW WKH QRWHV LW LV IDU IURP REYLRXV ZKDW FKRUG LW LV /XFNLO\ WKHUH LV DQ HDV\ PHWKRG WR ILQG RXW ZKHUH WKH URRW QRWH LV LQ DQ DUUHDG\ LQYHUWHG YRLFLQJ WKDW \RX PLJKW JHW 7KH PHWKRG LV WR VLPSO\ UHDUUDQJH WKH QRWHV XQWLO WKH\ DUH VWDFNHG LQ WKLUGV DOSKDEHWLFDOO\ DQG WKLV LV EHFDXVH YDVW PDMRULW\ RI WKH FKRUGV DUH EXLOW LQ WKLUGV

/HW ¶V VD\ ZH KDYH D FKRUG YRLFLQJ ZLWK WKH IROORZLQJ QRWHV LQ RUGHU IURP ORZHVW WR KLJKHVW $) $ ') DQG ZH ZDQW WR ILJXUH RXW ZKHUH WKH URRW LV DQG ZKDW FKRUG WKLV LV

)LUVW ZH UHFRJQL]H WKDW WKHUH DUH RQO\ WKUHH GLVWLQFW QRWHV LQ WKLV FKRUG VR WKLV PXVW EH D WULDG RI VRPH NLQG :H DOVR GLVUHJDUG DQ\ ¶V RU E ¶V EHFDXVH ZH MXVW ZDQW WR ILJXUH RXW WKH WKLUGV DOSKDEHWLFDOO\

7KHQ ZH VWDFN D WKLUG RQ WRS RI HDFK QRWH VWDUWLQJ IURP WKH ORZHVW ZKLFK LQ WKLV FDVH LV $
$ WKLUG XS IURP $ LI ZH FRXQW DOSKDEHWLFDOO\ $ % & † LV WKH & QRWH :H FKHFN LI WKLV QRWH PDWFKHV WKH QRWH QH[W WR $ LQ RXU FKRUG ,W GRHVQ ¶W VLQFH WKH QH[W QRWH LV)

7KHQ ZH PRYH RQ WR WKH QH[W QRWH †)
:H GLVUHJDUG WKH VKDUS VR D WKLUG XS IURP)) * $ † LV $ QRWH 7KLV LV JRRG EHFDXVH $ PDWFKHV WKH QH[W QRWH LQ RXU FKRUG 7KLV PHDQV WKDW) FRXOG EH WKH VWDUWLQJ QRWH

7KHQ ZH DGG D WKLUG XS IURP $ ZKLFK DJDLQ LV WKH & QRWH DQG LW GRHVQ ¶W PDWFK WKH QH[W QRWH ZKLFK LV ' ,W VHHPV WKDW) LV QRW WKH URRW QRWH

7KHQ ZH PRYH RQ WR '
$ WKLUG XS IURP ' LV) ,W PDWFKHV :H DGG D WKLUG WR) DQG JHW $ QRWH 0DWFK DJDLQ

6LQFH WKLV LV D WULDG LW LV HQRXJK WR JHW WZR PDWFKHV LQ URZ IRU TXDGDGV \RX ZRXOG QHHG WKUHH PDWFKHV 1RZ ZH MXVW WDNH EDFN WKH VKDUS VR UIODWV WR DOO QRWHV WKDW KDG WKHP ,Q WKLV FDVH RQO\ ) KDG D VKDUS 7KH QRWHV ZH JRW E\ UHDUUDQJLQJ WKHP LQ WKLUGV DUH ') $ DQG WKHVH DUH WKH QRWHV RI D '0DMRU FKRUG 6LQFH $ QRWH ZDV DW WKH ERWWRP DV WKH ORZHVW QRWH LW PHDQV WKDW WKLV LV WKH LQYHUVLRQ RI '0DMRU FKRUG

7KLV SURFHVV LV TXLWH VWUDLJKWIRUZDUG DQG \RX FDQ XVH LW DQ\WLPH \RX ¶UH XQVXUH ZKDW FKRUG \RX ¶UH IDFLQJ :KHQ LW FRPHV WR WULDGV \RX MXVW KDYH WR ZDWFK RXW IRU

WWRVHTVXVSHQVERQV DQG ,DQ\RNWKNTQRWHVZLWKDWWDFNIGWKLOGGRNMQ+

PDWFK WU\WR FRXQWXS DOSKDEHWLFDOO\E\D VHFRQG DQG D IRXUWK)RU D VXV FKRUG ILUVW ILQG D QRWH PDWFK ZLWK WKH VWDFNHG VHFRQG DQG WKHQ ZLWK D VWDFNHG IRXUWK
QRWH)RU D VXV FKRUG ILUVW ILQG D PDWFK ZLWK WKH VWDFNHG IRXUWK DQG WKHQ ZLWK VWDFNHG VHFRQG QRWH

$V WKH QXPEHU RI WKH QRWHV LQ D FKRUG LQFUHDVHV LW JHWV SURJUHVVLYHO\ PRUH GLIILFXOW WR ILJXUH RXW WKH FKRUG SOXV D FKRUG FDQ VRPHWLPHV KDYH VHYHUDO GLIIHUHQW QDPHV † WKH FKRLFH RI ZKLFK ZLOO GHSHQG RQ WKH RYHUDOO KDUPRQ\ \RX ¶UH JLYHQ RU QRW

6ODVK &KRUGV

6ODVK FKRUGV DUH VLPSO\ WKH PHWKRG ZH XVH WR QRWDWH LQYHUWHG FKRUGV

7KH\ ORRN DV WZR OHWWHU QDPHV VHSDUDWHG E\ D IRUZDUG VODVK IRU H[DPSOH

$$C^{maj7}/_{G}$$

+HUH WKH QRWH RQ WKH WRS OHIW UHSUHVHQWV WKH FKRUG DQG WKH QRWH RQ WKH ERWWRP
ULJKW UHSUHVHQWV WKH FKRUG QRWH WKDW LV LQ WKH EDVV DV WKH ORZHVW QRWH ,Q WKLV FDVH
* LV LQ WKH EDVV RI WKH & 0DMRU FKRUG 7KLV FKRUG KDV WKH QRWHV & (
* % VR ZKDW ZH KDYH LV WKH QG LQYHUVLRQ RI WKH &0DM FKRUG

,Q D EDQG VLWXDWLRQ EDVV SOD\HU XVXDOO\ FRYHUV WKH ORZHVW QRWH RI VODVK FKRUGV
DQG WKHQ D FKRUG SOD\HU FDQ MXVW SOD\ D UHJXODU QRQ LQYHUWHG FKRUG

6ODVK FKRUGV DUH QRW MXVW XVHG IRU QRWDWLQJ LQYHUWHG FKRUGV 7KH\ DUH PRVW RI WKH
WLPH EXW WKH\ FDQ KDYH RWKHU XVHV DV ZHOO

2QH VXFK LQVWDQFH LV ZKHQ ZH KDYH D VODVK FKRUG LQ ZKLFK WKH ERWWRP ULJKW QRWH LV QRW D SDUW RI WKH FKRUG RQ WKH WRS OHIW)RU H[DPSOH *) LV WHOOLQJ XV WKDW ZH KDYH WR SOD\ D * PDMRU WULDG RQ WRS RI WKH) QRWH LQ WKH EDVV 7KLV LV XVXDOO\ UHJDUGHG DV EDG QRWDWLRQ SUDFWLFH EHFDXVH \RX GRQ ¶W DFWXDOO\ UHDOL]H DW ILUVW ZKDW
FKRUG LW LV WKDW \RX ¶UH SOD\LQJ LQ D FKRUG SURJUHVVLRQ 7KLV OLPLWV \RXU RSWLRQV DV D SHUIRUPHU DQG PDNHV LW KDUGHU WR PDNH JRRG GHFLVLRQV ZKHQ LW FRPHV WR YRLFH OHDGLQJ DQG KRZ WR PRYH IURP RQH FKRUG WR WKH QH[W

9RLFH /HDGLQJ

:LWK DOO WKH FKRUGV ZH KDG VR IDU \RX PLJKW ZRQGHU ZKDW LV WKH SXUSRVH RI FKRUG LQYHUVLRQV DQG ULJKW\OO\ VR %XW WKHUH LV RQH PDLQ UHDVRQ ZK\ PXVLFLDQV XVH WKHP DQG LW FRPHV GRZQ WR YRLFH OHDGLQJ

9RLFH OHDGLQJ LV DQ ROGHU WHUP WKDW FRPHV IURP FKRUDO PXVLF 7KLV LV WKH PXVLF ZULWWHQ IRU FKRLUV † D PXVLFDO HQVHPEOH FRQVLVWLQJ RI RQO\ VLQJHUV ,Q WKLV W\SH RI PXVLF HDFK YRLFH VLQJHU KDV D XQLTXH PHORG\ OLQH DQG WKH ZD\ WKLV PHORG\ OLQH PRYHV DQG LQWHUDFWV ZLWK RWKHU YRLFHV LQ D FKRLU LV FDOOHG YRLFH OHDGLQJ

:KDW ¶V LQWHUHVWLQJ LV WKDW WKLV WUDQVODWHV WR RWKHU FRQFHSWV LQ PXVLF)RU H[DPSOH
LI LQVWHDG RI VLQJHUV ZH KDG IRXU GLIIHUHQW LQVWUXPHQWV HDFK SODLQJ D XQLTXH PHORG\ OLQH WKRVH PHORGLHV † FRQVLVWLQJ RI LQGLYLGXDO QRWHV † ZRXOG OLQH XS WR FUHDWH DQG RXWOLQH FKRUGV 9RLFH OHDGLQJ ZRXOG EH WKH SURFHVV E\ ZKLFK WKRVH PHORGLHV PRYH LQ KDUPRQ\

9RLFH OHDGLQJ DOVR WUDQVODWHV WR SODLQJ FKRUGV RQ D VLQJOH LQVWUXPHQW +HUH LW LV
DOO DERXW KRZ ZH FRQQHFW FKRUGV WRJHWKHU RQH DIWHU DQRWKHU WR FUHDWH VPRRWK
PHORGLF OLQHV IRU HDFK QRWH LQ D FKRUG DV LW PRYHV WR WKH QH[W FKRUG

/HW ¶V VD\ ZH SOD\ D FRXSOH RI QRWH FKRUGV LQ D FKRUG SURJUHVVLRQ :H FDQ WKLQN RI HDFK QRWH DV D VHSDUDWH PHORG\ OLQH WKDW PRYHV DV RQH FKRUG FKDQJHV WR DQRWKHU FKRUG 7KH SRLQW RI YRLFH OHDGLQJ LV WR FUHDWH PHORGLF OLQHV IRU HDFK RI WKH FKRUG QRWHV WKDW DUH VPRRWK HDV\ WR SOD\ DQG JRRG VRXQGLQJ VR WKDW WKH
RYHUDOO FKRUG SURJUHVVLRQ VRXQGV EHWWHU DQG PRUH DSSHDOLQJ WR RXU HDUV ,Q RUGHU
WR GR WKLV ZH KDYH WR SD\ DWWHQWLRQ ZKDW HDFK RI WKH FKRUG QRWHV DUH GRLQJ

,Q WKH HDUO\ GD\V FRPSRVHUV QRWLFHG WKDW PRYLQJ EHWZHHQ WKH QRWHV WKDW DUH
FORVHU WR HDFK RWKHU VRXQGV EHWWHU 6R JHQHUDOO\ ZKHQ FRPSRVLQJ RU DUUDQJLQJ KDUPRQ\ ZH ZDQW WR DYRLG DZNZDUG LQWHUYDOV DQG MXPSV WKDW DUH GLIILFXOW WR SOD\
DQG GRQ ¶W VRXQG DV JRRG

)URP WKLV FRPHV WKH PDLQ SULQFLSOH RI YRLFH OHDGLQJ ZKLFK VWDWHV WKDW DV WKH KDUPRQ\ FKDQJHV HDFK YRLFH FKRUG QRWH IRU H[DPSOH VKRXOG LGHDOO\ PRYH QR PRUH WKDQ RQH ZKROH VWHS XS RU GRZQ LQ SLWFK $ QRWH FDQ UHPDLQ WKH VDPH EHWZHHQ WZR FKRUGV RU LW FDQ PRYH E\ D KDOI VWHS RU D ZKROH VWHS EXW QR PRUH WKDQ WKDW 7KLV LV FRQVLGHUHG D JRRG YRLFH OHDGLQJ SUDFWLFH 7KLV ZRXOG SURGXFH VPRRWK VRXQGLQJ FKRUG FKDQJHV WKDW DUH PRUH PHORGLF DQG HDVLHU WR SOD\ DQG OLVWHQ WR $JRRG DQDORJ\ IRU WKLV ZRXOG EH UK\PLQJ RI WKH O\ULFV LQ D VRQJ † WKH

ZRUGV WKDW UK\PH DUH OLNH WKH FKRUG QRWHV WKDW PRYH QR PRUH WKDQ D ZKROH VWHS DV WKH FKRUG KDUPRQ\ FKDQJHV

/HW ¶V VD\ WKDW ZH KDYH D YHU\ SRSXODU FKRUG VHTXHQFH FDOOHG %DU %OXHV 7KLV VHTXHQFH FRQVLVWLQJ RI RQO\ FKRUGV 9 , , † DQG 9 LQ DQ\ NH\ † LV EDVHG RQ RQH RI WKH PRVW IDPLOLDU VRXQGLQJ FKRUG SURJUHVVLRQV 2QH RI WKH PDLQ UHDVRQV WKLV SURJUHVVLRQ VRXQGV VR PHPRUDEOH LV EHFDXVH RI JRRG YRLFH OHDGLQJ /HW ¶V DQDO\]H ZKDW WKH FKRUG QRWHV DUH GRLQJ DV WKH\ FKDQJH WKURXJKRXW WKH SURJUHVVLRQ :H ZLOO GR WKLV LQ WKH NH\ RI (

, FKRUG LQ WKH NH\ RI (LV (ZLWK WKH QRWHV (* %

,9 FKRUG LV $ ZLWK WKH QRWHV $ & (

9 FKRUG LV % ZLWK WKH QRWHV %')

,Q D %DU %OXHV VHTXHQFH WKHVH FKRUGV PRYH LQ WKH IROORZLQJ ZD\

(† % †) † $ † % †) † $ † (

1RWH WKDW WKHVH FKRUGV DUH SODYHG IRU GLIIHUHQW SHULRGV RI WLPH † ZH ¶UH MXVW ORRNLQJ DW WKH FKDQJHV KHUH

,Q WKH ILUVW FKDQJH (WR $ (QRWH UHPDLQV WKH VDPH * JRHV D KDOI VWHS XS WR $ DQG % PRYHV E\ D ZKROH VWHS XS WR &

,Q WKH VHFRQG FKDQJH $ WR (LW ¶V DOO WKH VDPH MXVW LQ UHYHUVH

,Q WKH WKLUG FKDQJH (WR % (JRHV D KDOI VWHS GRZQ WR ' LW LV DOVR D ZKROH VWHS GRZQ IURP) * JRHV D ZKROH VWHS GRZQ WR) DQG % UHPDLQV WKH VDPH

,Q WKH IRXUWK FKDQJH % WR $ % QRWH PRYHV D ZKROH VWHS GRZQ WR $ LW LV DOVR D ZKROH VWHS GRZQ IURP & ' PRYHV D KDOI VWHS GRZQ WR & LW LV DOVR D KDOI VWHS GRZQ IURP (DQG) PRYHV D ZKROH WRQH EDFN WR (QRWH

,Q WKH VHFRQG WR ODVW FKDQJH (WR % LQ WKLV VHTXHQFH LI ZH ZHUH WR LQWURGXFH DQ $ QRWH WR D % FKRUG ZKLFK LV D PLQRU[WK † WKXV JHWWLQJ WKH % FKRUG WKLV LV RIWHQ GRQH LQ RQ WKH 9 FKRUG WR SURYLGH VWURQJHU UHVROXWLRQ WR WKH , FKRUG $ ZRXOG UHVROYH QLFHO\ RQ WKH ILQDO FKDQJH % WR (WR * DQG % QRWHV LQ WKH (FKRUG

:H FDQ VHH WKDW WKHUH LVQ ¶W D VLQJOH LQWHUYDO EHWZHHQ WKH QRWHV LQ WKHVH FKRUGV WKDW LV ODUJHU WKDQ RQH ZKROH VWHS %XW ZKDW LI ZH ZDQW WR FUHDWH GHVFHQGLQJ RU DVFHQGLQJ EDVV OLQHV ZKLFK LV RIWHQ GRQH LQ YRLFH OHDGLQJ RU WR FUHDWH VPHFLILF PHORGLHV ZLWKLQ WKH FKRUGV DV WKH\ FKDQJH RU HYHQ WR KDYH D SHGDO QRWH † ZKLFK

LV D VLQJOH QRWH SODHG LQ RQH SODFH WKDW VXVWDLQV FRQVRQDQWO\ DQG GLVVRQDQWO\

WKURXJKRXW WKH FKRUG SURJUHVVLRQ" 7KLV LV ZKHUH FKRUG LQYHUVLRQV DQG GLIIHUHQW FKRUG YRLFLQJV FRPH LQWR SOD\

,Q RUGHU WR HIIHFWLYHO\ YRLFH OHDG \RX RIWHQ QHHG WR LQYHUW FKRUGV DQG XVH YRLFLQJV WKDW DOORZ \RX WR IROORZ YRLFH OHDGLQJ SULQFLSOHV)RU H[DPSOH LI \RX ZDQW WR KDYH D GHVFHQGLQJ EDVV OLQH \RX FDQ LQYHUW WKH FKRUGV VR WKDW WKH ORZHVW
QRWH RI HDFK LV QR PRUH WKDQ D ZKROH VWHS DZD\ IURP WKH EDVV QRWH RI WKH ODVW SOD\HG FKRUG &KRUG LQYHUVLRQV FDQ DOVR EH XVHG LI \RX ZDQW WR UHPDLQ LQ RQH SRVLWLRQ RQ \RXU LQVWUXPHQW DQG SOD\ DOO \RXU FKRUGV WKHUH ZLWKRXW MXPSLQJ XS RU GRZQ ZLWK \RXU KDQG 7KLV LV YHU\ XVHIXO IRU SOD\LQJ D SHGDO QRWH † \RX ZRXOG QHHG WR LQYHUW DOO FKRUGV VR WKDW \RX UHPDLQ LQ RQH SRVLWLRQ RQ \RXU LQVWUXPHQW
WKURXJKRXW WKH SURJUHVVLRQ

)RU DOO WKHVH UHDVRQV VWXG\LQJ YRLFH OHDGLQJ DQG LQYHUVLRQV LV LQFUHGLEO\ XVHIXO WR DQ\PXVLFLDQ HVSHFLDOO\ WR FRPSRVHUV DQG DUUDQJHUV

3RO\FKRUGV

LW LV SRVVLEOH WR FRPELQH FKRUGV WR SURGXFH QHZ FKRUGV 7KHVH DUH XVXDOO\ FDOOHG SRO\FKRUGV 2IWHQ WKHVH FKRUGV DUH FRPSOH[DQG GLIILFXOW WR SOD\ RYHU EXW WKH\ DUH XVHIXO WR VRPH LPSURYLVRUV DQG FRPSRVHUV IRU D YDULHW\ RI UHDVRQV

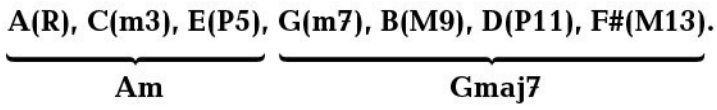
3RO\FKRUGV DV WKH QDPH LPSOLHV UHSUHVHQW WZR FKRUGV SOD\HG DW WKH VDPH WLPH ZLWK RQH EHLQJ SOD\HG RQ WRS RI WKH RWKHU 7KH\ DUH YHU\ VLPLODU WR VODVK FKRUGV EXW GLIIHUHQW LQ D IHZ LPSRUWDQW ZD\V

,QVWHDG RI ZLWK D IRUZDUG VODVK SRO\FKRUGV DUH QRWDWHG DV D IUDFWLRQ ZLWK RQH
FKRUG RQ WRS DQG WKH RWKHU RQ WKH ERWWRP 7KH FKRUG WKDW ¹V RQ WKH ERWWRP LV WKH
ORZHU SDUW RI WKH SRO\FKRUG ,Q RWKHU ZRUGV WKH WRS FKRUG LV SOD\HG RQ WRS RI WKH ERWWRP FKRUG

Gmaj7
Am

+HUH ¹V KRZ D QRWDWHG SRO\FKRUG XVXDOO\ ORRNV OLNH

+HUH ZH KDYH D *0DMRU FKRUG SOD\HG RQ WRS RI $ PLQRU FKRUG :KHQ ZH OLVW RXW WKHLU QRWHV VWDJHWKHU



† :KDW ZH HVVHQWLDOO\ JHW LV WKH $PLQRU FKRUG DQG WKLV LV EHFDXVH WKH QRWHV RI * PDMRU * % ' 0 DUH WKH PLQRU WK 0DMRU WK 3HUIHFW WK DQG 0DMRU LQ WKH NH\ RI $

/HW ¶V FKHFN RXW D KDUGHU H[DPSOH

,Q WKLV FDVH ZH KDYH D * 0DMRU FKRUG SODFHG RQ WRS RI ' PLQRU FKRUG /HW ¶V OLVW RXW WKH QRWHV RI ERWK FKRUGV DQG DQDO\]H WKHP

' P KDV QRWHV ') $ DQG * PDM KDV * % ' ,I ZH JURXS WKHP WRJHWKHU ZH JHW ') $ * %

$OO RI WKH QRWHV DUH VWDFNHG LQ WKLUGV DOSKDEHWLFDOO\ ZH OHDYH RXW WKH ODVW ' EHFDXVH LW LV UHSHDWHG EXW $ WR * LV D ZKLOH MXPS :H FKHFN WKH * QRWH LQ WKH NH\ RI ' PDMRU ZH DOZD\V FKHFN WKH NH\ RI WKH ERWWRP QRWH DQG VHH WKDW LW LV WKH 3HUIHFW WK ,Q H[WHQGHG FKRUG KDUPRQ\ 3HUIHFW WK DQ RFWDYH XS EHFRPHV D 3HUIHFW WK % QRWH LQ WKH NH\ RI ' LV 0DMRU WK DQG WKDW LV HTXDO WR D 0DMRU WK :KDW ZH KDYH LV ' DV WKH 5RRW) LV WKH PLQRU LQG $ LV WKH 3HUIHFW WK * LV WKH 3HUIHFW WK DQG % LV WKH 0DMRU WK

6LQFH ZH KDYH D PLQRU WULDG QR WK DQG WZR DGGHG QRWHV † WKLV LV DQ DGGHG WRQH FKRUG ZLWK WZR DGGHG WRQHV \RX FDQ ZULWH LW OLNH ' DGG ' DGG

:H FDQ FRQFOXGH WKDW SRO\FKRUGV DUH MXVW D VKRUWHU ZD\ RI ZULWLQJ ORQJ DQG FRPSOH[H[WHQGHG FKRUGV RI DQ\NLQG † LQFOXGLQJ WKH DOWHUHG RQHV $OWKRXJK WKLV SUHVHQWV D SUREOHP EHFDXVH ZKHQ ZH VHH D SRO\FKRUG ZH GRQ ¶W NQRZ DW ILUVW ZKDW NLQG RI FKRUG ZH ¶UH UHDOO\ GHDOLQJ ZLWK ,Q RWKHU ZRUGV ZH XVXDOO\ GRQ ¶W NQRZ WKH UHODWLRQVKLS RI WKH QRWHV LQ WKH WRS FKRUG WR WKH NH\ RI WKH ERWWRP FKRUG XQOHVV ZH DQDO\]H WKH QRWHV /LNH ZLWK WKH VODVK FKRUGV WKDW KDYH D QRQ FKRUG EDVV QRWH XVLQJ SRO\FKRUGV OLNH WKLV PDNHV LW PRUH GLIILFXOW WR ILJXUH RXW WKH KDUPRQ\ DQG PDNH JRRG GHFLVLRQV ZKHQ SOD\LQJ

3RO\FKRUGV DFWXDOO\ PDNH PXFK PRUH VHQVH LQ WKH FRQWH[W RI SRO\WRQDO PXVLF ZKHUH \RX KDYH WZR RU PRUH WRQDO FHQWHUV KDSSHQLQJ DW WKH VDPH WLPH DQG

\RX ·IUHWWULQJWRFUHDWHWZRVHSDUDWHKDUPRQLHV0RUHRQWKDWODWHULQWKH
ERRN

&KRUG3URJUHVVLRQV3DUW

$FKRUGSURJUHVVLRQLVVLPSO\DVHULHVRIFKRUGVWKDWOLSODHGWRJHWKHULQ

DPXVLFDOZD\$QVRQJVWUXFWXUHLVEDVHGRQDFKRUGSURJUHVVLRQDQGWKDW

SURJUHVVLRQWDNHVWKHOLVWHQHURQDMRXUQH\RIWHQVLRQDQGUHVROYH

&KRUGSURJUHVVLRQVKDYHDIRUP

7KHUHLVDFKRUGRUFKRUGVWKDWLVWKHFHQWHURIWKHSURJUHVVLRQFDOOHGWKH7RQLF
7KLVFKRUGRUFKRUGVLVRIWHQSODFHGILUVWDQGLWLVDOZD\VWKHFHQWHURIJUDYLW\RI
WKHSURJUHVVLRQ††HYHU\WKLQJHOVHZDQWVWRUHVROYHWRDWRQLFLQZD\RUDQRWKHU

7KHQWKHUHLVWKHSDUWRIWKHSURJUHVVLRQWKDWPRYHVDZD\IURPWKH7RQLF ZKLFK
LQYROYHVSODLQJRQHRUPRUH ΔVXEGRPLQDQW◊FKRUGV

$QGWKHUHLVWKHSDUWRIWKHSURJUHVVLRQWKDWPRYHVEDFNWRZDUGWKH7RQLFLQZKLFK
ΔGRPLQDQW◊FKRUGVDUHSODFHG7KHVHFKRUGVKDYHWKHVWURQJHVWSXOOWR WKH
7RQLF
EHFDXVHWKH\GRQRWVRXQGOLNHWKH7RQLF
7KHPRVWEDVLFXQLWRIDFKRUGSURJUHVVLRQLVWKHUHVROXWLRQ WKHPRYHPHQWIURPRQH
FKRUGWKDWLVQRWDWRQLFFKRUGWRDWRQLFFKRUGHVWDEOLVKLQJDQGUHVROYLQJWHQVLRQ
FUHDWLQJPRYHPHQWDQGSURGXFLQJDKDUPRQLFGLUHFWLRQ

$UHVROXWLRQOLNHWKLV††WZRFKRUGVUHVROYLQJWRWKH7RQLF††LVFDOOHGDFDGHQFH

$VSHFLDOLQVWDQFHRIWKLVLVWKHPRYHPHQWIURPDPDMRUFKRUGRQWKHILIWKWRWKH
WRQLFDV9,LQDPDMRUNH\RU9LLQDPLQRUNH\,IQHLWKHURIWKRVHFKRUGVLVDQ
LQYHUVLRQWKHQWKHUHVROXWLRQLVFDOOHGD3HUIHFWFDGHQFHDQGLWLVWKHIRXQGDWLRQ
RI
PRVWRIWKHEDVLFFKRUGSURJUHVVLRQVLQ:HVWHUQPXVLF:KHWKHUWKH SURJUHVVLRQLVLQ
DPDMRUNH\LQZKLFKFDVHWKH7RQLFFKRUGLVPDMRU,DQGWKHGLDWRQLFFKRUGVRIWKDW
NH\DUHLQGH[HGWRWKHPDMRUVFDOHRIWKDWURRW RULQDPLQRUNH\LQZKLFKFDVHWKH
7RQLFFKRUGLVPLQRU LDQGWKHGLDWRQLFFKRUGVRIWKDWNH\DUHLQGH[HGWRWKHPLQRU
VFDOHRIWKDWURRW WKHFKRUGEXLOWRQWKHILIWKWKHGRPLQDQWFKRUGLVPDMRU

7KLVLVEHFDXVHLQRUGHUIRUWKHUHVROXWLRQIURPWKH9FKRUGWR7RQLFWR
EH
VWURQJWKH[UG RIWKH9FKRUGQHHGVWREHPDMRUVRWKDWLWFDQUHVROYH[XSWRWKH
RIWKH7RQLFFKRUG7KLVPD\VRXQGFRPSOLFDWHGEXWDNH VRPHWLPH ZLWKLW

2IWHQ WLPHV WKHVH GRPLQDQW FKRUGVDUH SODHG[WK DV FKRUGV GRPLQ[WK DQW
TXDGDGV LQ ZKLFK D PLQRU[WK LV DGGHG WR D PDMRU WULDG WKXV DGGLQJ PRUH

WHQVLRQ &KRUG SURJUHVVLRQV DUH ZULWWHQ OLNH FKRUGV XVLQJ URPDQ QXPHUDOV ZLWK GDVKHV LQ EHWZHHQ 1XPHUDOV IRU PDMRU DQG GRPLQDQW FKRUGV DUH FDSLWDOL]HG ZKLOH WKH PLQRU RQHV DUH QRW

&RPPRQ &KRUG 3URJUHVVLRQV

7KHUH DUH VHYHUDO IDLUO\ FRPPRQ SURJUHVVLRQV WKDW UHSHDW LQ VRQJ DIWHU VRQJ 7KH EDVLF FKRUG SURJUHVVLRQ WKDW PDNHV XVH RI FDGHQFHV LV PRVW VLPSO\ D ,,9 9 SURJUHVVLRQ ZKLFK UHSHDWV LQ ZKLFK WKH PDMRU ,9 FKRUG DFWV DV WKH
VXEGRPLQDQW WKH PDMRU 9 FKRUG DFWV DV WKH GRPLQDQW DQG WKH PDMRU , FKRUG DFWV DV WKH WRQLF

,Q WKH NH\ RI & IRU H[DPSOH WKLV SURJUHVVLRQ , ,9 9 ZRXOG EH & ++ (++ *

$QRWKHU FRPPRQ SURJUHVVLRQ HVSHFLDOO\ LQ MD]] LV LL 9 , SURJUHVVLRQ LQ ZKLFK WKH PLQRU LL FKRUG DFWV DV WKH VXEGRPLQDQW WKH PDMRU 9 FKRUG DFWV DV WKH GRPLQDQW DQG WKH PDMRU , FKRUG DFWV DV WKH WRQLF

,Q WKH NH\ RI & WKH SURJUHVVLRQ LL 9 , ZRXOG EH ' PLQRU ++ * ++ &

&KRUG SURJUHVVLRQV DOVR LQFOXGH PLQRU YHUVLRQV RI WKRVH SURJUHVVLRQV LLYY LL Y L

2WKHU FRPPRQ SURJUHVVLRQV LQ URFN DQG SRS PXVLF DUH YDULDWLRQV PRUH RU OHVV RI , ,9 9 VXFK DV , ,9 , ,9 9 ,9 ,

+HUH ¶V D OLVW RI VRPH YHU\ FRPPRQ FKRUG SURJUHVVLRQV \RX FDQ ILQG LQ VRQJV

, ++ YL 9 ++ 9, ++
, ++ 9 ++ YL 9, ++
, 9 ++ 9, ++ 9 ++
, 9 ++ 9, ++
LLL ++ YL ++ LL 9 ++
, 9 ++ , ++ 9, ++
, ++ 9 ++ LL 9, ++
, ++ YL ++ LL 9 ++
, ++ 9 ++ YL ++ LLL
, ++ LLL 9 ++ 9, ++

<RX FDQ MXVW SLFN D NH\ DQG SOD\ DQ\ RI WKHVH FKRUG SURJUHVVLRQ DQG LW ZLOO VRXQG JUHDW

0RUH FRPSOLFDWHG SURJUHVVLRQV LQFOXGH IRU H[DPSOH LLL YL LL 9 , LQ ZKLFK
GLDWRQLF FKRUGV DUH SOD\HG RQ WKH WK QG WK DQG WRQLF RI D PDMRU NH\ , YLL YL 9 DQG LLL YL 9 , DPRQJ RWKHUV

1RWLFH WKDW LQ DOO RI WKHVH FDVHV PRYHPHQW LV HVWDEOLVKHG DZD\ IURP VRPH WRQLF FKRUG XVXDOO\ WR VRPH VXE GRPLQDQW FKRUG DQG WKHQ SDVVLQJ WKURXJK D
GRPLQDQW FKRUG XVXDOO\ WKH 9 FKRUG D FDGHQFH LV SURGXFHG DV WKH SURJUHVVLRQ UHVROYHV EDFN WR WKH WRQLF

([WHQGLQJ DQG 6XEVWLWXWLQJ &KRUG 3URJUHVVLRQV

$ PXVLFDO SLHFH GRHVQ ¶W DOZD\V QHHG WR IROORZ D VWULFW FKRUG SURJUHVVLRQ 2IWHQ WLPHV WKHUH DUH VRPH LQWHUHVWLQJ VWXII KDSSHQLQJ QRQ GLDWRQLF FKRUGV EHLQJ LQWURGXFHG NH\FKDQJHV HWF

,W LV DOVR SRVVLEOH WR H[WHQG FKRUG SURJUHVVLRQV E\ DGGLQJ VPDOOHU SURJUHVVLRQV ZLWKLQ WKH SULQFLSOH SURJUHVVLRQ RIWHQ XVLQJ WHPSRUDU\ KDUPRQLF FHQWHUV WR PXOWLSO\ WKH RYHUDOO QXPEHU RI FKRUGV

2QH YHUVLRQ RI WKLV LV VRPHWKLQJ XVHG RIWHQ LQ MD]] LQ ZKLFK D GRPLQDQW FKRUG LV XVHG DIILWK DERYH VRPH GLDWRQLF FKRUG $ FRPPRQ YHUVLRQ RI WKLV LV WR ILQG D 9 FKRUG XVHG DERYH WKH 9 RI WKH WRQLF WKLV LV D FDOOHG D 9 9 RU ΔILYH VHYHQ RI ILYH ÷ FKRUG

2QH YHU\ FRPPRQ WULFN LV WR VLPSO\ DOWHU WKH FKRUG RI D SDUWLFXODU VFDOH GHJUHH

)RU H[DPSOH LQVWHDG RI SOD\LQJ WKH XVXDO PLQRU LL LQ D SURJUHVVLRQ KDYLQJ ¤P„ ¤ ZRXOG PHDQ WKDW WKLV FKRUG KDV QRZ WXUQHG LQWR D GRPLQDQW FKRUG

2QH H[DPSOH RI VXFK SURJUHVVLRQ FRPPRQ LQ MD]] ZRXOG EH

, ‡ YL 9 ‡ ,, ‡

6RPHWLPHV FKRUGV DUH VWUXQJ WRJHWKHU WKDW DVFHQG RU GHVFHQG D VFDOH
GLDWRQLFDOO\ RU FKURPDWLFDOO\ LQ RUGHU WR PRYH IURP RQH SDUW RI WKH FKRUG VWUXFWXUH WR DQRWKHU %HWZHHQ WKHVH WZR WHFKQLTXHV DGGLQJ FKRUGV D DERYH

H[LVWLQJ FKRUGV DQG PRYLQJ GLDWRQLFDOO\ RU FKURPDWLFDOO\ WKHUH LV D KXJH VSDFH RI SRVVLELOLWLHV DYDLODEOH WR D FRPSRVHU RU LPSURYLVRU 1RW DOO RI WKLV SRVVLELOLWLHV
ZLOO VRXQG JRRG KRZHYHU ‡ LW ¶V LPSRUWDQW WR DOZD\V OHW \RXU HDUV JXLGH \RX ,W LV DOVR SRVVLEOH WR VXEVWLWXWH FKRUGV LQ RUGHU WR YDU\ D SURJUHVVLRQ UHSHDWLQJ LW
GLIIHUHQWO\ WR DUULYH DW D ORQJHU RYHUDOO SURJUHVVLRQ 7KH VLPSOHVW IRUP RI WKLV LV WR VXEVWLWXWH RQH WRQLF GRPLQDQW RU VXE GRPLQDQW FKRUG IRU DQRWKHU RI WKH VDPH ‵
IDPLO\
‵
‵ 'LDWRQLF FKRUGV WKDW FRXOG DFW DV WRQLF DQG DUH WKHUHIRUH LQ WKH ΔWRQLF IDPLO\ ♭ DUH
VW UG DQG WK FKRUGV
QG DQG WK FKRUGV DUH ERWK LQ WKH ΔVXE GRPLQDQW IDPLO\ ♭
WK DQG WK FKRUGV DUH ERWK LQ WKH ΔGRPLQDQW IDPLO\ ♭

,W LV DOVR FRPPRQ LQ SRS PXVLF LQ %HDWOHV VRQJV LQ SDUWLFXODU WR VXEVWLWXWH D
PDMRU FKRUG IRU D PLQRU FKRUG LQ D SURJUHVVLRQ 7KLV LV RIWHQ FDOOHG 7 ΔKH %HDWOHV WULFN 7 ♭KLV LV D WHFKQLTXH WKDW FRPHV WR SRS PXVLF E\ZD\ RI WKH EOXHV LQ ZKLFK PDMRU RU GRPLQDQW FKRUGV DUH XVHG RQ WKH , ,9 DQG 9 HYHQ WKRXJK WKH VRQJ LV LQ D PLQRU NH\ VLQFH WKH PLQRU SHQWDWRQLF VFDOH LV WKH IRXQGDWLRQ RI EOXHV

)RU H[DPSOH

, ‡ 9, ‡ LY ‡ ,

0RYLQJ 7RQDO &HQWHUV 7RQDO &HQWHUV 9V . H \ V

:KHQ ZH WDON DERXW H[WHQGLQJ SURJUHVVLRQV E\ HVWDEOLVKLQJ WHPSRUDU\ KDUPRQLF FHQWHUV ZH DUH LQYRNLQJ WKH GLVWLQFWLRQ EHWZHHQ WRQDO FHQWHUV DQG NH\V RU NH\
FHQWHUV ,W LV SRVVLEOH IRU D VRQJ WR EH LQ RQH NH\ EXW WR KDYH PXOWLSOH WRQDO
FHQWHUV ,Q RWKHU ZRUGV , FDQ UHYROYH DURXQG & PDMRU DQG WKHQ & PLQRU DQG WKHQ % PDMRU EXW , PLJKW VWLOO EH SODLQJ LQ WKH NH\ RI $ PDMRU LI WKDW LV WKH WUDMHFWRU\ RI WKH SURJUHVVLRQ LQJHQHUDO DQG LI WKH VRQJ KDV QRW FKDQJHG NH\V ‡ RU PRGXODWHG

7KLV LV GRQH PRVW FRPPRQO\ LQ MD]] ZKHUH VRPHWLPHV D VRQJ WKDW LV ZULWWHQ LQ D

SDUWLFXODU NH\ ZLOO PRYH WKURXJK PDQ\ WRQDO FHQWHUV VRPHWLPHV YHU\ TXLFNO\

)DPRXVO\ IRU LQVWDQFH -RKQ &RWUDQH KDG FRPSRVLWLRQV WKDW PRYHG WKURXJK DV PDQ\ DV QLQH WRQDO FHQWHUV LQ MXVW D IHZ EDUV

:KDW ,V 0RGXODWLRQ DQG +RZ ,V ,W 8VHG

'LVWLQFW IURP WRQDO FHQWHUV DUH NH\ FHQWHUV :KHQ D NH\ LV FKDQJHG ZH VD\ WKDW WKH VRQJ KDV PRGXODWHG ,Q WKHVH FDVHV UDWKHU WKDQ D WHPSRUDU\ KDUPRQLF FHQWHU
EHLQJ HVWDEOLVKHG DQG WKHQ SDVVHG WKURXJK HQ URXWH XVXDOO\ WR WKH NH\ RI WKH
VRQJ WKH HQWLUH KDUPRQLF VWUXFWXUH RI WKH SURJUHVVLRQ VKLIWV XS RU GRZQ E\ VRPH LQWHUYDO

7KHUH DUH QR KDUG DQG IDVW UXOHV LQ SRS RU URFN WKDW JRYHUQ WKH ZD\ PRGXODWLRQ RFFXUV EXW LQ JHQHUDO LW RFFXUV DW WKH EHJLQQLQJ R I D UHSHWLWLRQ R I VRPH
SURJUHVVLRQ DQG XVXDOO\ WKDW HQWLUH UHSHWLWLRQ RFFXUV LQ WKH PRGXODWHG NH\ 7R
VPRRWK WKH WUDQVLWLRQ LW LV VRPHWLPHV HDV\ WR UHSODFH WKH FKRUG LPPHGLDWHO\
SUHFHGLQJ WKH PRGXODWLRQ ZLWK D GRPLQDQW FKRUG IURP WKH QHZ PRGXODWHG NH\

0RGXODWLRQV DUH FRPPRQ LQ SRS PXVLF FRXQWU\ DQG URFN SDUWLFXODUO\ DW WKH HQG R I D VRQJ ZKHUH D UHIUDLQ PD\ EH UHSHDWHG D IXOO VWHS DERYH WKH RULJLQDO URRW 7KLV LV RQH VLPSOH IRUP R I PRGXODWLRQ †† UHSHDWLQJ D SURJUHVVLRQ H[DFWO\ DV LW ZDV RQO\ KLJKHU RU ORZHU

0RVW RI WHQ WKLV RFFXUV XS UDWKHU WKDQ GRZQ DQG LW XVXDOO\ RFFXUV LQ KDOI VWHSV ZKROH VWHSV RU PDMRU WZR VWHS LQWHUYDOV 7KH HQG R I WKH 7LWDQLF WKHPH VRQJ LV DQ H[DPSOH R I WKLV VRUW R I PRGXODWLRQ

&KRUG $USHJJLRV

&KRUGV DUH PDGH XS RI GLIIHUHQW QRWHV ZH XVXDOO\ SOD\ WKHVH QRWHV DW WKH VDPH WLPH EXW ZH FDQ DOVR SOD\ WKHP LQGLYLGXDOO\ DQG WKDW ¶V ZKHQ ZH ¶UH SOD\LQJ DUSHJJLRV $USHJJLRV DUH VLPSO\ WKH QRWHV R I D FKRUG SOD\HG RQH DW D WLPH LQ DQ\ RUGHU UDWKHU WKDQ DOO DW WKH VDPH WLPH

$USHJJLRV DUH VLPLODU WR VFDOHV LQ D ZD\ EHFDXVH ZKHQ ZH OHDUQ D VFDOH ZH OHDUQ D EXQFK R I QRWHV WKDW ILW RYHU D VHTXHQFH R I FKRUGV LQ VRPH NH\ :KHQ ZH SOD\

WKHVH VFDOH QRWHV WKH\ZLOO VRXQG SOHDVDQW RYHU WKRVH FKRUGV 2Q WKH RWKHU KDQG

ZKHQ ZH OHDUQ DUSHJJLRV ZH OHDUQ D EXQFK RI QRWHV WKDW ILW XVXDOO\ RYHU D VLQJOH FKRUG LQ D FKRUG VHTXHQFH 6R JHQHUDOO\ ZH SOD\ DUSHJJLRV RYHU D VLQJOH FKRUG LQ D FKRUG SURJUHVVLRQ DQG ZH FKDQJH DUSHJJLRV ZKHQHYHU D FKRUG FKDQJHV

$USHJJLRV DUH YHU\ XVHIXO ZKHQ ZH LPSURYLVH D PHORG\ RYHU D FKRUG SURJUHVVLRQ :H PD\ XVH D SDUWLFXODU VFDOH IRU WKLV SURJUHVVLRQ DQG WKHQ LI DW DQ\ SRLQW D FKRUG FRPHV XS WKDW GRHVQ¶W ILW WKH NH\ RI WKH FKRUG SURJUHVVLRQ RXU VFDOH QRWHV ZRXOG QRW ILW RYHU WKDW FKRUG DQG ZLOO VRXQG XQSOHDVDQW ,Q VXFK
LQVWDQFH ZH FDQ VZLWFK WR SOD\LQJ DUSHJJLRV MXVW IRU WKDW VLQJOH FKRUG WKDW GRHVQ¶W ILW WKH NH\ DQG LW ZLOO VRXQG UHDOO\JRRG

2QH VXFK H[DPSOH ZRXOG EH LI \RX KDG D SURJUHVVLRQ OHW¶V VD\ L 9 ††,, 9 ††, 9 †† ZKLFK LV D FRPPRQ SURJUHVVLRQ XVHG LQ IODPHQFR PXVLF DOVR FDOOHG $QGDOXVLDQ FDGHQFH ,Q WKH NH\ RI $P WKH FKRUGV ZRXOG EH $P †† (†† * †† (

+HUH \RX FDQ XVH $ PLQRU VFDOH WR VROR DQG LW ZRXOG ILW SHUIHFWO\ RYHU $P * DQG) FKRUGV EXW ZKHQ (FRPHV MXVW IRU WKDW RQH FKRUG \RX ZRXOG VZLWFK WR SOD\LQJ (GRPLQDQW DUSHJJLR †† PHDQLQJ WKH QRWHV RI (FKRUG (* % ' LQ DQ\FRPELQDWLRQ

7KLV LV DQRWKHU PRUH EHJLQQHU\ ZD\ WR XVH DUSHJJLRV 7KH JHQHUDO WHQGHQF\ KRZHYHU LV WR JUDGXDOO\PRYH RQ WR WKLQNLQJ DQG SOD\LQJPRUH FKRUGDOO\ †† WR WUHDW HDFK FKRUG LQ D SURJUHVVLRQ VHSDUDWHO\DQG SOD\PRUH FKRUG QRWHV LQ\RXU VRORV 7KLV ZD\ \RXU VRORV ZLOO VRXQG PRUH DSSURSULDWH PRUH PHORGLF PRUH XQLTXH DQG OHVVJHQHULF -D]] SOD\HUV GR WKLV DOO WKH WLPH

,I\RX WKLQN DERXW LW DQG DQDO\]H VRPH RI WKH PRVW IDPRXV VRORV LQ KLVWRU\ IRU H[DPSOH WKRVH LQ VRQJV OLNH +RWHO &DOLIRUQLD 6WDLUZD\ WR +HDYHQ RU 6XOWDQV RI 6ZLQJ \RX ZLOO QRWLFH WKDW RQH RI WKH WKLQJV WKDW PDNHV WKHVH VRORV VR
FDSWLYDWLQJ FRPHV GRZQ WR WKH QRWH FKRLFHV WKDW DUH PRVWO\ DUSHJJLRV RI WKH FKRUGV SOD\LQJ LQ WKH EDFNJURXQG

$USHJJLRV DUH DOVR XVHG WR RXWOLQH WKH KDUPRQ\ RI D VRQJ LQ D ZD\ VR WKDW \RX GRQ¶W KDYH WR SOD\ FKRUGV LQ WKH XVXDO VHQVH DOO QRWHV DW WKH VDPH WLPH <RX FDQ
MXVW SLFN RXW LQGLYLGXDO FKRUG QRWHV DQG SOD\ WKHP DV WKH SURJUHVVLRQ PRYHV XVXDOO\LQ D FHUWDLQ SDWWHUQ 7KLV ZLOO PDNH LW VRXQG DOPRVW DV LI \RX ¶UH SOD\LQJ WKH FKRUGV HYHQ WKRXJK \RX ¶UH MXVW SOD\LQJ WKHLU QRWHV LQGLYLGXDOO\ $QRWKHU JRRG WKLQJ DERXW DUSHJJLRV LV WKDW \RX FDQ RIWHQ JHW DZD\ ZLWK SOD\LQJ GLVVRQDQW FHUWDLQ FKRUGV WKDW ZRXOG RWKHUZLVH VRXQG DZIXO LI DOO WKHLU QRWHV ZHUH SOD\HG DW WKH
VDPH WLPH

,Q FRQFOXVLRQ OHDUQ KRZ WR XVH DUSHJJLRV RQ \RXU LQVWUXPHQW OHDUQ ZKHUH DUH WKH QRWHV DQG KRZ WR ILQG WKHP TXLFNO\ OHDUQ FRRO UK\WKPLF SDWWHUQV E\ ZKLFK \RX FDQ SOD\ LQGLYLGXDO FKRUG QRWHV DQG XVH WKHP LQ \RXU SOD\LQJ :KHQ LW FRPHV WR VRORLQJ DQG LPSURYLVDWLRQ VWXG\ WKH FKRUGV WKDW \RX ¬HUH SOD\LQJ RYHU DQDO\]H WKH FRQWH[W DQG WKH HIIHFW WKDW HDFK QRWH KDV RYHU D FKRUG WKDW LV SOD\LQJ
1RWLFH KRZ E\ IRFXVLQJ PRUH RQ WKH FKRUG QRWHV \RXU VROR VWDUW WR VRXQG PRUH HQWLFLQJ DQG FDSWLYDWLQJ

3DUW

$OO $ERXW WKH 5K\WKP

7KH ,PSRUWDQFH RI +DYLQJ D *RRG 5K\WKP

)HZ WKLQJV LQ PXVLF DQG SHUKDSV LQ OLIH DUH DV LPSRUWDQW DV UK\WKP $V VR PDQ\ MD]] IXQN DQG EOXHV PXVLFLDQV NQRZ LW LV SRVVLEOH WR SOD\ YLUWXDOO\ DQ\WKLQJ DQG KDYH LW VRXQG JRRG LI \RX ¶YH JRW WKH JURRYH WKH VZLQJ WKH IHHO WKH YLEH WKH IORZ

'HYHORSLQJ UK\WKP LV PRUH WKDQ VLPSO\ XQGHUVWDQGLQJ WKH QXPEHUV ++ LW LV DERXW SXWWLQJ KRXUV LQ ZLWK \RXU LQVWUXPHQW UHDOO\ EHFRPLQJ FRPIRUWDEOH ZLWK LW SHUIHFWLQJ\RXU WHFKQLTXH HVWDEOLVKLQJ DQ LQWHUQDO FORFN HWF

6RPH RI WKLV LV QHDUO\ LPSRVVLEOH WR GHYHORS SDVVLYHO\ RQ \RXU RZQ DQG VR SOD\LQJ ZLWK RWKHU PXVLFLDQV ZKR KDYH JUHDW UK\WKP VNLOOV DV RIWHQ DV SRVVLEOH ORRSLQJ\RXUVHOI UHFRUGLQJ\RXU SOD\LQJ DQG XVLQJ\RXU ORRSV WR SUDFWLFH RYHU WKLV ZLOO KHOS GLDJQRVH UK\WKPLF SUREOHPV DQG SOD\LQJ WR D PHWURQRPH
HVSHFLDOO\ ZKHQ \RX DUH ILUVW OHDUQLQJ VRPH WHFKQLTXH RU SDWWHUQ DUH DOO TXLWH
LPSRUWDQW

3OD\LQJ VORZ DQG IRFXVLQJ RQ WLPLQJ UDWKHU WKDQ RQ VSHHG LV DOVR DQ LPSRUWDQW SDUW RI GHYHORSLQJ JRRG UK\WKP ,I \RX ¶UH SOD\LQJ VORZ \RX ¶OO EH H[HUFLVLQJ\RXU WLPLQJ DQG LI \RX ¶UH SOD\LQJ IDVW HU \RXU IRFXV ZLOO EH PRUH RQ \RXU VSHHG 7KH FDWFK LV WKDW JUHDW VRXQGLQJ VSHHG SOD\LQJ DQG LPSUHVLYH WHFKQLTXH DUH RQO\ GHYHORSHG WKURXJK YHU\ VORZ DQG HQJDJHG UHSHWLWLRQ \RX KDYH WR KDYH WKH WLPLQJ GRZQ ILUVW DQG ZLWK JUDGXDO VSHHG LQFUHDVHV

)RU DOO WKHVH UHDVRQV XQGHUVWDQGLQJ UK\WKP LV D ODUJH SDUW RI PXVLF WKHRU\ ++ KRZ WLPH LV GLYLGHG LQ PXVLF KRZ D SXOVH IXQFWLRQV KRZ D PXVLFLDQ FDQ FUHDWH DQG UHVROYH WHQVLRQ RU WHOO D VWRU\ UK\WKPLFDOO\ 8QGHUVWDQGLQJ DQG LQWHUQDOL]LQJ

WKHVH WKLQJV PD\ EH WKH PRVW LPSRUWDQW SDUW RI EHLQJ D SHUIRUPHU RU FRPSRVHU DQG VRXQGLQJ JRRG DQG LW PD\ DV ZHOO EH WKH PRVW UHZDUGLQJ DVSHFW RI \RXU SOD\LQJ

8QGHUVWDQGLQJ 7LPH %HDW %DU DQG 7HPSR

,Q PXVLF WKHRU\ WKH ZRUG ΔWLPH ÿ UHIHUV WR WKH SXOVH RU WKH EHDW RI WKH PXVLF DQG LWV WLPH VLJQDWXUH 7KH EHDW RI WKH PXVLF LV WKH PRVW IXQGDPHQWDO XQLW RI WLPH ,W LV ZKDW ZH WDS RXU IRRW QRG RXU KHDGV RU FODS RXU KDQGV WR ,W LV GHILQHG E\ WKH WLPH VLJQDWXUH RI D SLHFH

$ ΔEDU ÿ DOVR FDOOHG D ΔPHDVXUH ÿ LV DQRWKHU IXQGDPHQWDO XQLW WKDW PHDVXUHV WKH
WLPH RI D SLHFH DJDLQVW ZKLFK QRWH EHDWV GLYLVLRQV DUH XQGHUVWRRG ,Q RWKHU ZRUGV D EDU LV RQH FRPSOHWH F\FOH RI WKH EHDWV DQG LW LV DOZD\V GHILQHG E\ WKH WLPH VLJQDWXUH %DUV DUH D FRQYHQLHQW ZD\ RI NHHSLQJ WKH PXVLF RUJDQL]HG LQWR
VPDOOHU FKXQNV

7HPSR LV DQRWKHU FUXFLDO HOHPHQW LQ PXVLF ,W GHVFULEHV WKH VSHHG DW ZKLFK WKH EHDWV KDSSHQ ††WKH SXOVH RI WKH PXVLF ,W LV XVXDOO\ H[SUHVVHG LQ EHDWV SHU PLQXWH RU %30 ,W VLPSO\ WHOOV XV WKH QXPEHU RI EHDWV LQ RQH PLQXWH IRU H[DPSOH ESP PHDQV EHDWV SHU PLQXWH

.QRZLQJ DERXW WKH WLPH DQG WKH WHPSR RI D SLHFH DOUHDG\ WHOOV \RX PRUH RU OHVV KRZ WR SOD\ RYHU LW LW DOUHDG\ PDNHV WKH PRRG RI WKH SLHFH DSSDUHQW ,I \RX NQRZ QRWKLQJ PRUH DERXW D SLHFH JRLQJ LQ LW LV SRVVLEOH WR LPSURYLVH LQ FDUHIXO VRSKLVWLFDWHG DQG SRZHUIXO ZD\V XVLQJ \RXU HDU WR JXLGH \RXU KDUPRQLF DQG PHORGLF VHQVH

$W WKH VDPH WLPH LI \RX GR QRW XQGHUVWDQG ZKDW WKH WLPH RI D SLHFH LV HDV\ WR JHW ORVW LQ WKH IUD\ ZKHWKHU \RX DUH SOD\LQJ D FRPSRVHG SLHFH RU LPSURYLVLQJ 8QGHUVWDQGLQJ WLPH LV RI SDUDPRXQW LPSRUWDQFH

7LPH 'LYLVLRQV

,QPXVLF WKHRU\ WLPH LV GLYLGHG PDWKHPDWLFDOO\ DFFRUGLQJ WR VLPSOH UDWLRV 7KLV LV WUXH RI WLPH VLJQDWXUHV DV ZH ZLOO VHH DQG LW LV WUXH RI WKH ZD\ WKDW QRWHV RU EHDWV DUH GLYLGHG LQJHQHUDO :H VD\ WKDW DQ\QRWH KHOG IRU VRPH DPRXQW RI WLPH KDV D SDUWLFXODU YDOXH DQG WKDW YDOXH LV H[SUHVVHG QXPHULFDOO\ 6R WKLV QRWH YDOXH LV VLPSO\ D VSDFH RI WLPH LQ PXVLF ZLWK D SDUWLFXODU OHQJWK

,QPXVLF WKHUH DUH QRWHV ZLWK WKH IROORZLQJ YDOXHV

- :KROH QRWH D QRWH KHOG IRU WKH OHQJWK RI D VWDQGDUG EDU LQ FRPPRQ WLPH † PRUH RQ WKLV VRRQ
- +DOI QRWH KHOG IRU KDOI DV ORQJ DV D ZKROH QRWH
- 4XDUWHU QRWH KHOG IRU D TXDUWHU RI D ZKROH QRWH RU KDOI RI WKH KDOI QRWH
- (LJKWK QRWH DQ WK RI D ZKROH QRWH RU KDOI RI WKH TXDUWHU QRWH
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7KHVH DUH WKH PRVW FRPPRQ QRWH YDOXHV 7KHUH DUH DOVR QRWHV WKDW DUH ORQJHU WKDQ ZKROH QRWHV EXW UDUHO\ XVHG

- 'RXEOH ZKROH QRWHV KHOG IRU WKH OHQJWK RI WZR EDUV LQ FRPPRQ WLPH
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- 0D[LPD DQRWH KHOG IRU D WRWDO OHQJWK RI HLJKW EDUV LQ FRPPRQ WLPH

$QG WKHUH DUH QRWHV WKDW DUH VKRUWHU WKDQ D 7KRVH DUH

- QG QRWH D QRWH ZLWK WKH YDOXH HTXDO WR WKH KDOI RI WK QRWH
- WK QRWH KDOI RI QG
- WK QRWH KDOI RI WK

,W LV QRW YHU\ FRPPRQ WR HQFRXQWHU QRWHV VXFK DV ORQJD RU PD[LPD RU QRWHV DQ\ VKRUWHU WKDQ WK RU QGV H[FHSW IRU VRPHWLPHV LQ FRPSRVLWLRQV SODFHG DW D VORZHU WHPSR EXW ZLWK YHU\ IDVW UXQV

$QRWKHU SRLQW LQ D PXVLFDO SLHFH LW LV SRVVLEOH WR SOD\ ORWV RI QRWHV HV DQG VORZ WKDW VRXQG UHDOO\ IDVW ZKLOH VWLOO NHHSLQJ WLPH DQG UHWDLQLQJ WKH WHPSR RI WKH SLHFH EPR RU OHVV ,W LV DOVR SRVVLEOH WR SOD\ RQO\ D IHZ QRWHV

ZKROH DQG KDOI QRWHV IRU H[DPSOH HYHQ WKRXJK WKH WHPSR RI WKH WXQH LV UHDOO\ IDVW ESP ,Q ERWK FDVHV WKH WHPSR JLYHV WKH RYHUDOO VXEMHFWLYH IHHO IRU WKH VSHHG RI WKH WXQH

,Q DGGLWLRQ WR EDVLF GLYLVLRQV DQ\ RI WKHVH QRWHV FDQ EHFRPH D GRWWHG QRWH D
QRWH ZLWK D VLPSOH GRW "HP QH[W WR LW ZKLFK LQGLFDWHV WKDW WKH OHQJWK RI WKH QRWHLV
WLPHV WKH QRUPDO OHQJWK)RU H[DPSOH

- 'RWWHG ZKROH QRWH LV RQH ZKROH QRWH RQH KDOI QRWHV RU WKUHH KDOI QRWHV
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- 'RWWHG TXDUWHU QRWH LV RQH TXDUWHU QRWH RQH HLJKWK QRWH RU WKUHH HLJKWK QRWHV
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- 'RWWHG VL[WHHQWK QRWH LV RQH VL[WHHQWK QRWH RQH TXDUWHU QRWH HWF

7KHUH DUH DOVR QWXSOHWV VXFK DV WULSOHWV DQG SHQWXSOHWV RU TXLQWXSOHWV LQ ZKLFK
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IRU LQVWDQFH ILW QRWHV ZKHUHV WKHUH DUH XVXDOO\ QRWHV ZH "OO JHW WR WKHP
LQ D ELW

7LPH 6LJQDWXUHV ([SODLQHG

7LPH VLJQDWXUH DOVR FDOOHG D PHWUH RU PHWHU GHVFULEHV WKH VWUXFWXUH RI D EDU RI PXVLF ,W WHOOV XV WKH QXPEHU RI WKH EHDWV LQ D EDU DQG WKH QRWH YDOXHV RI HDFK
EHDW ,Q DGGLWLRQ WR WKH WHPSR RI D SLHFH WKH WLPH VLJQDWXUH WHOOV D PXVLFLDQ PRUH
RU OHVV ZKDW WKH PXVLF ZLOO IHHO OLNH UK\WKPLFDOO\ ZKLFK LV YHU\ LPSRUWDQW

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VLJQDWXUH LV DOZD\V ORFDWHG DW WKH EHJLQQLQJ RI WKH PXVLFDO VWDII IRU D PXVLFDO SLHFH ,W LV ZULWWHQ DV WZR QXPEHUV RQH EHQHDWK WKH RWKHU

7KH PRVW FRPPRQ WLPH VLJQDWXUH LQ PXVLF WRGD\ LV DOVR FDOOHG &RPPRQ WLPH

7KH ILUVW QRWH LQ WKLV UDWLR WRS QRWH LV\RX ¬UH ORRNLQJ DW WKH PXVLFDO VWDII WHOOV XV
WKH QXPEHU RI GLYLGHG QRWHV LQ D EDU DQG LW FDQ EH DQ\QXPEHU QRWH WKLV GRHV

QRW WHOO \RX KRZ PDQ\ QRWHV ZLOO DFWXDOO\ EH LQ WKH PHDVXUH RQO\ KRZ PDQ\ QRWHV RI D SDUWLFXODU OHQJWK ZRXOG ILW LQ WKH PHDVXUH 6R LQ WLPH WKH ILUVW PHDQV WKDW WKHUH DUH IRXU EHDWV QRWHV LQ RQH EDU

7KH VHFRQG QRWH ERWWRP QRWH LI \RX ¶UH ORRNLQJ DW WKH VWDII WHOOV XV WKH QRWH
YDOXH RI WKRVH GLYLGHG QRWHV 7KLV VHFRQG QRWH ZKLFK FDQ RQO\ EH DQG VR RQ WHOOV WKH SHUIRUPHU WKH ΔIIHO ÷ RU WKH SXOVH RI WKH VRQJ LV LW SXOVHG LQ QRWHV RU LQ TXDUWHU QRWHV" DQG DORQJ ZLWK WKH ILUVW QXPEHU WHOOV WKH SHUIRUPHU
KRZ ORQJ HDFK EDU LV ZLWK UHVSHFW WR WKDW SXOVH

,Q WKH VHFRQG WHOOV XV WKDW ZH ¶UH GHDOLQJ ZLWK TXDUWHU QRWHV

7LPH

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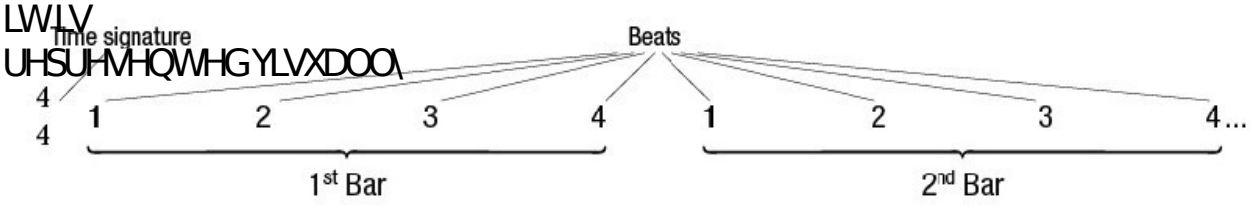

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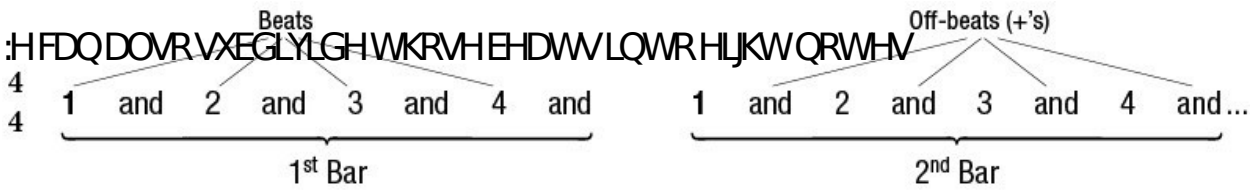

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▫P DQG ▪I RU ▪I▫P LVKRZZHSURQRXQFHWKHRIIEHDWV ▪t ZKLFKDUHQRWHVLQEHWZHHQ WKHUHJXODUPDLQEHDWV

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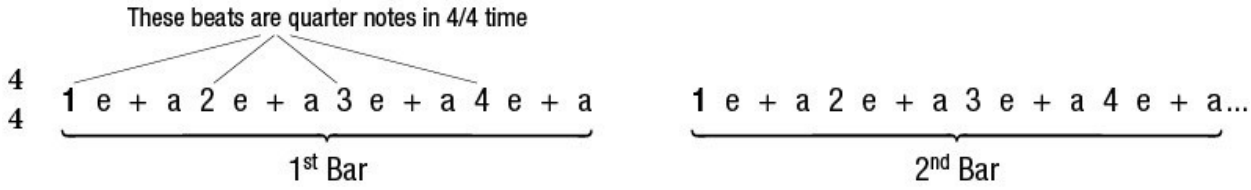

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▫PD ▪I LVKRZZHSURQRXQFHWKHRIIEHDWEHWZHHQWKH ▫PDQG ▪I DQGWKHIROORZLQJPDLQ EHDW

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,ISRVVLEOH XVHD PHWURQRPH WKDWKDV ▫PDFFHQW ▪I IHDWXUH 7KHDFFHQWZLOO LQGLFDWH
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XQGHUVWDQGEDUV 0HWURQRPH FOLFNLVWKHUH WR KHOS\RX QRWLFH ZKHQHYHU\RXIDOO RI WKH EHDW <RX QHHG WR PDNH VXUH WKDW \RX▪UH SODLQJ RQ WKH EHDW DQG UHDOO\
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KHOSV\RX WR XQGHUVWDQG KRZ EHDW LV GLYLGHG DQG\RX OHDUQ KRZ WR IHHO WKH SXOVH DQG LQWHUQDOL]H WLPH

,)LUVW KHUH ¹V ZKDW\RX ¹UH JRLQJ WR SOD\

:KROH QRWHV ††† FODS RQFH RQ WKH ILUVW EHDW RI HDFK EDU 'R WKLV IRU XS WR EDUV

+DOI QRWHV ††† WZR FODSV SHU EDU RQH RQ EHDW DQG WKH VHFRQG RQ EHDW

4XDUWHU QRWHV ††† IRXU FODSV SHU EDU RQH RQ HYHU\ VLQJOH EHDW SOD\LQJ TXDUWHU QRWHV 6HH ILJ

(LJKWK QRWHV ††† HLJKW FODSV SHU EDU RQH RQ HYHU\EHDW SOXV RQ WKH ΔDQG ¹V ÷ ZKLFK DUH LQ EHWZHHQ QRWHV 6HH ILJ

6L[WHHQWK QRWHV ††† VL[WHHQ FODSV SHU EDU ZKLFK PHDQV IRXU FODSV SHU HYHU\ EHDW SOD\LQJ VL[WHHQWK QRWHV 6HH ILJ

3OD\ HDFK RI WKH QRWHV IRU XS WR EDUV ±P

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„„ $IWHU\RX JHW FRPIRUWDEOH ZLWK WKLV LQVWHDG RI SOD\LQJ LQ WZR RU PRUH EDUV \RX FDQ QRZ WU\ WR FRPELQH HYHU\WKLQJ LQ D VLQJOH EDU 7KLV LV ZKHUH FRPPRQ UK\WKPLF SDWWHUQV VWDUW WR HPHUJH

+HUH DUH D IHZ H[DPSOHV

3OD\ D TXDUWHU QRWH RQ FODS RQ EHDW WKHQ WZR HLJKW QRWHV WZR FODSV † RQH RQ EHDW DQG WKH VHFRQG RQ WKH ±P DQG ¹I DIWHU WKH EHDW IRXU VL[WHHQWK QRWHV FODSV † RQH RQ EHDW VHFRQG RQ ±PH ¹I WKLUG RQ ±P DQG ¹I IRXUWK RQ ±P D ¹I DQG ILQDOO\ WZR HLJKW QRWHV
RQ EHDW

DQG H DQG D DQG □ DQG UHSHDW IRU IRXU EDUV

+DOI QRWH EHDW DQG HLJKW QRWH EHDW TXDUWHU QRWH EHDW

DQG □ DQG UHSHDW IRU XS WR EDUV

,9 &UHDWH DW OHDVW WZR RI\RXU RZQ UK\WKP SDWWHUQV E\ FRPELQLQJ WKH QRWHV LQ WKH VDPH ZD\

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DW OHDVW IRXU GLIIHUHQW SDWWHUQV LQ EDUV

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V\QFRSDWLRQ XWLOL]LQJ GRWWHG QRWHV UHVWV WULSOHWV DQG RWKHU QWXSOHWV PRUH RQ
WKLV VRRQ SRO\UK\WKPV DQG SRO\PHWHUV ,Q WKLV ZD\ \RX FDQ SOD\ SUHWW\ PXFK DQ\WKLQJ UK\WKPLFDOO\

:H FDQ DOVR GHULYH D IHZ IRXQGDWLRQDO UK\WKPLF VWUXFWXUHV VRPH RI ZKLFK \RX ¶YH DOUHDG\ OHDUQHG ZKLFK DUH OLNH WKH SLHFHV RI D SX]]OH :KHQ \RX
FRPELQH WKHVH SLHFHV \RX FDQ FUHDWH YLUWXDOO\ DQ\ UK\WKPLF SDWWHUQ WKDW \RX ZDQW 2QFH \RX OHDUQ WKHVH XQLWV \RX ZLOO EH DEOH WR KHDU DQG UHFRJQL]H SDWWHUQV ZLWK QR HIIRUW DV ZHOO DV LPSURYLVH DQG FUHDWH QHZ SDWWHUQV HDVLO\ RQ WKH VSRW <RX ZLOO OHDUQ DERXW WKLV VRRQ

%HIRUH WKDW OHW ¶V VHH ZKDW KDSSHQV LQ WLPH

7LPH

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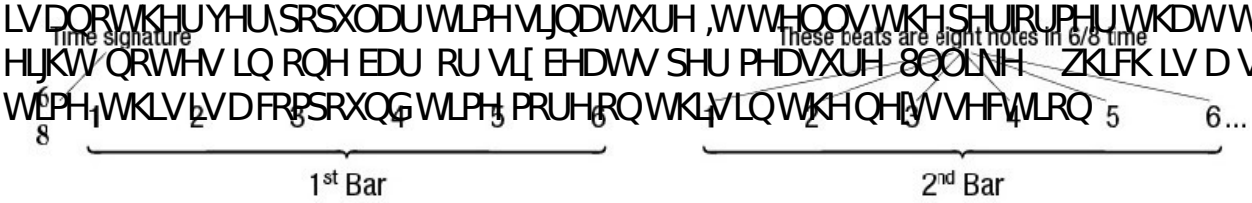

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WK

+RZ WR &RXQW LQ

%HFDXVH RI WKH GLIIHUHQW EHDW YDOXH WKH QRWHV DUH QRZ FRXQWHG LQ D GLIIHUHQW ZD\

(LJKW QRWH †† KDV D YDOXH RI RQH EHDW DQG LW LV WKH EDVLF XQLW IRU FRXQWLQJ

HWF

RQH WZR WKUHH IRXU ILYH VL[

,I \RX SOD\ D QRWH RU WDS RQ DOO VL[EHDWV LQ D PHDVXUH \RX ¹UH SOD\LQJ HLJKW QRWHV $V \RX WU\ WKLV \RX FDQ FRXQW VD\ \RX W ORXG HDFK RI WKH EHDWV <RX FDQ DOVR DFFHQW EHDW LQ HDFK PHDVXUH WR JHW D EHWWHU IHHO ZKHUH WKH EDUV VWDUW DQG HQGV

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HWF

RQH WZR WKUHH IRXU ILYH VL[

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RQH WZR WKUHH IRXU ILYH VL[

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 QRWHV LQ † WR GLYLGH HYHQ IXUWKHU LV VLPSOH :H MXVW DGG ¹P H ¹ DQG ¹P D ¹ OLNH ZLWK WKH QRWHV LQ

HDQG D HDQG D HDQG D HDQG D HDQG D HDQG D

6LPSOH &RPSRXQG DQG &RPSOH[7LPH 6LJQDWXUHV

7KHUH DUH PRVW FRPPRQ W\SHV RI WLPH VLJQDWXUHV

6LPSOH
&RPSRXQG
&RPSOH[

6LPSOH WLPH LV WKH QDPH JLYHQ WR PXVLFDO WLPH WKDW LV GLYLVLEOH E\ XQLWV RI ,Q RWKHU ZRUGV DQ\ WLPH \RX DUH WHPSWHG WR FRXQW ΔRQH WZR RQH WZR ÖŸ \RX DUH GHDOLQJ ZLWK VLPSOH WLPH 7KLV LQFOXGHV WLPH VLJQDWXUHV VXFK DV DQG

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6R WKH PHDVXUH FRQWDLQV LQ RUGHU WKH IROORZLQJ EHDWV VWURQJ ZHDN VWURQJ ZHDN

:KHQ ZH FRXQW WKH PHDVXUH DQG FODS RXU KDQGV WR LW ZH FODS RU SXW DQ DFFHQW RQ WKH VWURQJ EHDWV DQG VR WKH PHDVXUH DV D ZKROH LV GLYLGHG LQWR WZR SDUWV 7KDW
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&RPSRXQG WLPH LV WKH QDPH JLYHQ WR PXVLF WLPH WKDW LV GLYLVLEOH E\
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7DNH IRU H[DPSOH WLPH ,Q WKHUH DUH WKUHH EHDWV LQ RQH PHDVXUH †† 6WURQJ ZHDN ZHDN

:KHQ ZH FRXQW LW ZH FRXQW LW LQ OLNH D ZDOW] 7 ††KLV PDNHV DQ H[DPSOH RI D FRPSRXQG WLPH

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,Q WKHUH DUH EHDWV 6WURQJ ZHDN ZHDN VWURQJ ZHDN ZHDN

8QOLNH LQ PHDVXUH WKH VHFRQG VWURQJ EHDW XQGHUVFRUHG \RX FDQ VD\ LV ¤P OHVV VWURQJ ¥ WKDQ WKH ILUVW VWURQJ EHDW

,Q WKLV VHQVH LV FORVHU WR ZKLFK KDV EHDWV LQ RQH PHDVXUH WKUHH JURXSV RI WKUHH ZLWK WKH ILUVW EHDW EHLQJ WKH VWURQJHVW 6WURQJ ZHDN ZHDN VWURQJ ZHDN ZHDN VWURQJ ZHDN ZHDN

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ILUVW DV D JURXS RI DQG WKHQ DV D JURXS RI 7KH ILUVW QXPEHU ¤ LV QHLWKHU GLYLVLEOH E\ QRU

,Q WKHUH DUH VHYHQ HLJKW QRWHV XVXDOO\ VXEGLYLGHG LQWR WKUHH SDUWV 6WURQJ
ZHDN ZHDN VWURQJ ZHDN VWURQJ ZHDN $JDLQ WKLV LV D FRPSOH[WLPH VLPSO\ EHFDXVH LW FRQVLVWV RI WLPH VLJQDWXUHV FDQ \RX WHOO ZKLFK RQHV" WKDW DUH XQHTXDO DQG WKH ILUVW QXPEHU LV QRW GLYLVLEOH E\ QRU

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7ULSOHWV DQG Q 7XSOHWV

7XSOHWV DUH D ZD\ RI DOWHULQJ WKH ZD\ WHPSRUDULO\ WKDW D VHULHV RI QRWHV LV FRXQWHG 7KH\ DUH DQRWKHU ZD\ RI VXEGLYLGLQJ WKH EHDW

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HLJKWQRWH WULSOHWV TXDUWHU QRWH

VL[WHHQQRWH WULSOHWV TXDUWHU QRWH RU RQH HLJKWQRWH

QRWH WULSOHWV "

, ҺOO OHW\RX ILJXUH RXW WKH ODVW RQH

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SRO\UK\WKP

7KH PRVW FRPPRQ WXSOHWV DUH WXSOHWV RU WULSOHWV EXW WKHUH DUH DOVR WXSOHWV
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XVHG PDLQO\ GXH WR WKHLU URGGQHVV

3RO\UK\WKPV DQG 3RO\PHWHUV

,W LV SRVVLEOH WR FUHDWH ZLOGO\ FRPSOLFDWHG WLPH VLJQDWXUHV DQG VLQFH D FRPSRVHU RU LPSURYLVRU FDQ PRYH EHWZHHQ WLPH VLJQDWXUHV XVLQJ RQH IRU VRPH QXPEHU RI EDUV DQG WKHQ FKDQJLQJ LW WR VRPHWKLQJ HOVH LW LV SRVVLEOH WR FUHDWH GLIILFXOW
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,W LV DOVR ZRUWK QRWLQJ WKDW GLIIHUHQW WLPH VLJQDWXUHV FDQ EH VWDFNHG RQ WRS RI RQH
DQRWKHU :KHQ WKLV LV GRQH HLWKHU D SRO\UK\WKP RU SRO\PHWHU ++ VRPHZKDW RI DQ DGYDQFHG FRQFHSW ++ UHVXOWV

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$FFHQWV 6\QFRSDWLRQV '\QDPLFV 7HPSR &KDQJHV

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6\QFRSDWLRQ PHDQV VLPSO\ SOD\LQJ LQ EHWZHHQ WKH VSDFHV WKDW WKH WLPH VXJJHVWV ZH ¶YH DOUHDG\ VHHQ WKLV LQ WKH SUHYLRXV H[HUFLVH 3OD\LQJ IRU ORQJHU RU VKRUWHU WDNLQJ UHVWV VNLSSLQJ EHDWV HWF 7KLV LV WKH ILUVW VWHS WRZDUG IHHOLQJ DQG H[SUHVVLQJ WKH JURRYH RI D VRQJ HYHQ LI WKDW VRQJ LV ORRVHO\ RUJDQL]HG

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7KLV WDNHV PRUH VNLOO DQG DJUHDW LQWXLWLYH XQGHUVWDQGLQJ RI WLPH EXW WKH UHVXOWV
DUH ZRUWK WKH ZRUN LW WDNHV WR EH DEOH WR H[HFXWH WKHP ++ DQ\GUXPPHU ZLOO WHOO
\RX WKDW

$ SOD\HU FDQ DGMXVW WKH VSHHG RU YROXPH RI WKH VRQJ VSHHGLQJ XS VORZLQJ GRZQ HLWKHU E\ ILWWLQJ PRUH QRWHV LQWR WKH VDPH VSDFH RU E\ DGMXVWLQJ WKH WHPSR RI WKH SLHFH 7KLV FDQ EH GRQH FRPSRVLWLRQDOO\ RU LPSURYLVDWLRQDOO\

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RIWKHVRQJIRUDOOWKDWLWLPSOLHV †† DOORIWKHIDOVHVWDUWVDQGKDOI
UHVROXWLRQV WKH

VWXWWHUV WKH KLFFXSV JKRVW QRWHV WKH WKLQJV WKDW PDNH D JURRYH JURRYH

%XLOGLQJ %ORFNV RI 5K\WKP ++ &UHDWH DQ\ 5K\WKP 3DWWHUQ (DVLO\ :LWK $XGLR ([DPSOHV

$VZH ¶YH VHHQ E\ QRZ WKH PDLQ XQLW RI WLPH LV D EHDW DQG WKLV EHDW KDV GLIIHUHQW YDOXHV RU WLPH OHQJWKV GHILQHG E\ WKH WLPH VLJQDWXUH :H ¶YH DOVR VHHQ WKDW D
EHDW FDQ EH VXEGLYLGHG LQ GLIIHUHQW ZD\V %\ FRPELQLQJ WKHVH VXEGLYLVLRQV LW LV SRVVLEOH WR FUHDWH IXQGDPHQWDO UK\WKPLF XQLWV ZKLFK ZKHQ FRPELQHG FDQ FUHDWH YLUWXDOO\ DQ\ UK\WKPLF SDWWHUQ :LWK WKLV DUVHQDO RI UK\WKPV XQGHU \RXU EHOW\RX ZLOO EH DEOH WR PRUH HDVLO\ KHDU UHFRJQL]H DQG SOD\ DOO PRVW FRPPRQ UK\WKPV RXW WKHUH <RX ZLOO DOVR EH DEOH WR XVH WKHVH EORFNV WR FUHDWH \RXU RZQ UK\WKPLF SDWWHUQV DQG HYHQ LPSURYLVH ZLWK WKHP DV \RX SOD\

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LPSRUWDQW WR IDPLOLDUL]H \RXUVHOI ZLWK WKHVH IXQGDPHQWDO SDWWHUQV DQG VLPSO\
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7R KHOS \RX GR WKDW , ¶YH SURYLGHG DXGLR H[DPSOHV IRU HDFK RI WKHVH UK\WKPV VR
\RX FDQ DFWXDOO\ KHDU KRZ WKH\ VRXQG DQG SUDFWLFH DORQJ RQ \RXU LQVWUXPHQW (DFK SDWWHUQ LV LQ &RPPRQ WLPH ODVWV IRU EDUV DQG LV SOD\HG RQ JXLWDU XVLQJ D SLFNHG QRWH ++ & RU PLGGOH & IRXQG RQ WK IUHW * VWULQJ DW D VORZ WHPSR DORQJ ZLWK WKH PHWURQRPH

7KH IROORZLQJ H[DPSOHV DUH GLYLGHG LQWR WKRVH ZLWKRXW V\QFRSDWLRQ HDVLHU DQG ZLWK V\QFRSDWLRQ KDUGHU 7KHUH ZLOO DOVR EH RQH H[HUFLVH DW WKH HQG RI HDFK VHFWLRQ ZKLFK ZLOO KHOS WR SXW DOO WKLV LQWR SHUVSHFWLYH

/RRNLQJ DW WKH PRVW SRSXODU VLPSOH WLPH † RQH EHDW LV RQH TXDUWHU QRWH DQG
WKHUH DUH HLJKW EDVLF ZD\V WR FRPELQH VXEGLYLVLRQV WKDW DPRXQW WR WKH OHQJWK RI

RQH EHDW :H ‧OO VWDUW IURP WKHUH

1RWH WKDW WKH IROORZLQJ UK\WKPV DUH HDVLHU WR ZULWH XVLQJ WKH WUDGLWLRQDO PXVLF
QRWDWLRQ 7KLV ERRN H[SODLQV WKHRU\ ZLWKRXW QRWDWLRQ EXW WKDW ‧V ZK\ \RX FDQ ILQG
WKHVH H[DPSOHV ZULWWHQ LQ PXVLFDO QRWDWLRQ LQ P\ +RZ WR 5HDG 0XVLF IRU %HJLQQHUV ERRN UHODWHG WR WKLV RQH ZKLFK LV DOO DERXW XQGHUVWDQGLQJ WKDW DVSHFW RI PXVLF

7KH ILUVW UK\WKPXQLW LV D VLPSOH TXDUWHU QRWH ,Q D EDU LW ORRNV OLNH WKLV

3OD\LQJ TXDUWHU QRWHV LQ LV VLPSOH ‧ LW ‧V MXVW RQH WDSRQ HDFK EHDW $IWHU KHDULQJ WKH SDWWHUQ WU\ WR SOD\ DORQJ ZLWK HDFK +HUH ‧V KRZ WKLV RQH VRXQGV

4XDUWHU QRWHV DXGLR H[DPSOH ! KWWS JRR JO -U9+3:

(LJKW QRWH ‧ RQH TXDUWHU QRWH LV GLYLGHG LQWR WZR HLJKW QRWHV

DQG DQG DQG DQG

$V ZH NQRZ E\ QRZ HLJKW QRWHV DUH VLPSO\ SOD\LQJ RQ WKH EHDWV DV ZHOO DV RQ WKH ‧P DQGV ‧ LQ EHWZHHQ

WK QRWHV DXGLR H[DPSOH ! KWWS JRR JO F7G X

WK QRWHV ‧ RQH TXDUWHU QRWH LV VXEGLYLGHG LQWR VL[WHHQWK QRWHV

H DQG D H DQG D H DQG D H DQG D

1RZ ZH LQWURGXFH H ‧V DQG D ‧V WR VXEGLYLGH WKH EHDW LQWR IRXU 1RWH WKDW DUH WKH PDLQ EHDWV WKH RQHV SOD\HG DORQJ ZLWK WKH PHWURQRPH FOLFN DQG DQ\WKLQJ LQ EHWZHHQ LV FRQVLGHUHG DQ RII EHDW

WK QRWHV DXGLR H[DPSOH ! KWWS JRR JO //&6&

WK DQG WZR WKV

7KLV LV ZKHUH WKLQJV VWDUW WR JHW PRUH LQWHUHVWLQJ :H FDQ PL[VL[WHHQWK DQG HLJKW QRWHV WR
ILOO RXW RQH EHDW

,Q D EDU WKLV SDWWHUQ LV FRQWHG LQ D IROORZLQJ ZD\

H DQG D H DQG D H DQG D H DQG D

† ZKHQHYHU VRPHWKLQJ LV LQ SDUHQWKHVLV OLNH WKLV LW ‧V VLPSOH\ PHDQW LW ‧V RQH RU LI \RX ‧UH WDSSLQJ RU FODSSLQJ RU WKH QRWH SODHG EHIRUH LV VWLOO VRXQGLQJ LI \RX ‧UH SOD\LQJ D SLWFKHG QRWH /LNHZLVH LI D\RI WKH HOHPHQWV DUH EROGHG LW PHDQV WKDW WKH\ DUH SOD\HG

6R QRZ ZH SOD\ D HLJKW QRWH ZKLFK LV WKH QIROORZHG E\ WZR WK QRWHV DQG D

WK ¥WK DXGLR H[DPSOH ! KWWS JRR JO 5 (%

7ZR WKV DQGRQH WK
7KHRSSRVLWHRIWKHSUHYLRXVRQH ZHQRZKDYH

H DQG D H DQG D H DQG D H DQG D

+HUH WZRVL[WHHQWKV H DUHLPPHGLDWHO\IROORZHGE\DQHLJKWQRWH DQG

WK † WK DXGLR H[DPSOH ! KWWS JRR JO Z7;;X'

WK DQG D WK
0D\EHDOLWWOHPRUHGLIILFXOWWRJUDVSWKDQWKHSUHYLRXVWZR WKLVSDWWHUQLVFRQWHG
OLNH
WKLV

H DQG D H DQG D H DQG D H DQG D

$ WK LVLPPHGLDWHO\IROORZHGE\DQ WK QRWH H DQGWKHQZHKDYHDQRWKHU QRWH
DWWKHHQG D

WK † WK DXGLR H[DPSOH ! KWWS JRR JO 814L\K

'RWWHG WK DQG D WK
:HDUHQRZ DGGLQJGRWWHGQRWHVLQWRWKHPL['RWWHG QRWH LI\RXUHPHPEHU LVHTXDO
WRWKUHH WK QRWHVVRLWWDNHVXS RIWKHEHDW DQGWKHQZHKDYHD QRWHZKLFKLV
SHUFHQWRIWKHEHDW LQ

H DQG D H DQG D H DQG D H DQG D

$GRWWHG WK QRWH LV IROORZHGE\D WK DW WKHHQG D %RWK ▫PH ▫I DQG ▫PDQG ▫I
DUHLQ
SDUHQWKHVLVVRWKH\DUHQRWSODFHGRQEHFDXVHRIWKHGRWWHG WK DWWKHEHJLQQLQJ

WK † DXGLR H[DPSOH ! KWWS JRR JO (-05]

DQG D GRWWHG WK
6DPHDVWKHSUHYLRXVRQH RQO\LQUHYHUVH

H DQG D H DQG D H DQG D H DQG D

+HUH D WK LVLPPHGLDWHO\IROORZHGE\DGRWWHG WK H ZKLFK FRYHUV WKH RII EHDWV
▫PDQG ▫I DQG ▫PD ▫I

WK † DXGLR H[DPSOH ! KWWS JRR JO 7MVQV:

(LJKWQRWHWULSOHWV
%HJLQGHVXEGLYLGLQJWKHEHDWLQWRWWZR QRWHV RU RXU QRWHV ZHFDQDOVR VXEGLYLGH
LQWRWKUHHHYHQO\VSDFHG RXW QRWHWULSOHWV RQHWDNLQJXS RI WKHEHDW :H
FRXQWWKHPOLNHWKLV

H D H D H D H D

RU

WULSOHW WULSOHW WULSOHW WULSOHW

7KLV SDWWHUQ ZLOO EH PRUH GLIILFXOW WR JHW XVHG WR EXW LV YHU\ ZHOO ZRUWK WKH HIIRUW † SUDFWLFLQJ VZLWFKLQJ EHWZHHQ UHJXODU VXEGLYLVLRQV LQ RU DQG VXEGLYLVLRQV LQ LQ D EDU ZLOO GR ZRQGHUV IRU \RXU VHQVH RI WLPLQJ +HUH *V KRZ HIJKW QRWH WULSOHWV VRXQG

WK QRWH WULSOHWV DXGLR H[DPSOH ! KWWS JRR JO KJ..3J

%DU 5DQGRP 6HTXHQFH ([HUFLVH

+HUH LV D UDQGRP VHTXHQFH RI WKH SDWWHUQV VKRZQ VR IDU FRPELQHG WRJHWKHU UDQGRPO\ DFURVV EDUV

%DU 6HTXHQFH ([HUFLVH DXGLR H[DPSOH ! KWWS JRR JO G/RMV

<RXU FKDOOHQJH QRZ LV WR OLVWHQ WR WKLV VHTXHQFH DQG ZRUN RXW ZKLFK UK\WKP SDWWHUQV KDYH EHHQ XVHG LQ HDFK RI WKH EDUV LQ RUGHU 7KLV LV DJUHDW H[HUFLVH WR GHYHORS \RXU HDU DQG WKH DELOLW\ WR KHDU UHFRJQL]H DQG UHSURGXFH UK\WKPLF SDWWHUQV 7KH FRUUHFW DQVZHU ZLOO EH SURYLGHG DW WKH HQG RI WKLV ERRN LQ WKH &KHDW 6KHHW VHFWLRQ 8VH WKDW RQO\
IRU FRPSDULQJ \RXU DQVZHUV

1H[W WDNH DQ\ RI WKH SDWWHUQV VKRZQ DQG FRPELQH WKHP LQ DQ\ ZD\ WKDW \RX ZLVK <RXU WDVN LV WR VLPSO\ SOD\ ZLWK WKH SDWWHUQV DQG FRPH XS ZLWK \RXU RZQ EDU VHTXHQFH WKDW \RX OLNH

$GGLQJ 6\QFRSDWLRQ

*RLQJ RQH VWHS IXUWKHU ZH ZLOO QRZ DGG V\QFRSDWLRQ ZKLFK LV GHQRWHG E\ UHVWV %\ LQFRUSRUDWLQJ UHVWV LQWR SUHYLRXV UK\WKPLF EORFNV ZH JHW PRUH IXQGDPHQWDO UK\WKP XQLWV 5HVWV LQ PXVLF DUH VSDFHV RI WLPH GXULQJ ZKLFK WKHUH LV DQ DEVROXWH VLOHQFH † QR QRWH RU DQ\SHUFXVVLYH VRXQG LV EHLQJ KHDUG 7KHUH LV D UHVW HTXLYDOHQW IRU DOO RI WKH QRWHV VKRZQ VR IDU ZKROH QRWH UHVW KDOI QRWH UHVW TXDUWHU QRWH UHVW HWF ZH WDON PRUH DERXW UHVWV LQ
P\ +RZ WR 5HDG 0XVLF IRU %HJLQQHUV ERRN

7KHVH H[DPSOHV DUH D OLWWOH ELW WULFNLHU WR SOD\ DQG PDVWHU PDLQO\ EHFDXVH ZH PD\ QRW EH XVHG WR SOD\LQJ RU DFFHQWLQJ RII EHDWV EXW ZLWK VRPH SUDFWLFH DQG SDWLHQFH WKH\ ZLOO SUHVHQW QR SUREOHP

6\QFRSDWHG QRWHV WK
+HUH ZH KDYH DQ HLJKW QRWH UHVW IROORZHG E\ DQ HLJKW QRWH ,W FDQ EH FRXQWHG OLNH WKLV

__ DQG __ DQG __ DQG __ DQG

__ †† WKHVH EUDFNHWV VHUYH WR VKRZ D UHVWHG QRW SOD\HG QRWH 2Q D PXVLF VKHHW LW ZRXOG EH VKRZQ DV DQ WK QRWH UHVW ,IZH *UH FODSSLQJ RU WDSSLQJ HYHU\WKLQJ WKHQ \RX WUHDW WKHVH

EUDFNHWV DV WKH UHJXODU EUDFNHWV EXW LI \RX ¶UH VLQJLQJ RU SODLQJ D SLWFKHG QRWH IRU WKH MHH[DPSOHV WKHQ WKH MHVSDFHV RI WLPH DUH VLOHQW

<RX ¶OO QRWLFH WKDW WKLV LV D FRPPRQ UHJJDH UK\WKP +HUH ¶V KRZ LW VRXQGV

6\QFRSDWHG WKV DXGLR H[DPSOH ! KWWSV JRR JO\UDTH

6\QFRSDWHG QRWHV
1RZ ZH KDYH D WK QRWH UHVW IROORZHG E\ WKUHH QRWHV

__H DQG D __H DQG D __H DQG D __H DQG D

$V ZLWK WKH SUHYLRXV SDWWHUQ DOO RI WKH VWURQJ EHDWV ZKLFK IDOO RQ WKH PHWURQRPH FOLFN DUH VNLSSHG 7KH WULFN LV WR IHHO WKLV EHDW LQWHUQDOO\ DQG WKHQ SOD\ WKH RII EHDWV H DQG D

6\QFRSDWHG WK QRWHV DXGLR H[DPSOH ! KWWS JRR JO [)'R P

QRWH UHVW DQG WZR WKV
7KLV SDWWHUQ LV VRUW RI FRPELQDWLRQ RI WKH SUHYLRXV WZR SDWWHUQV ,W LV FRXQWHG OLNH WKLV

___H_DQG D___H_DQG D___H_DQG D___H_DQG D

WK QRWH UHVW RI WKH EHDW LV IROORZHG E\ WZR TH QRWHV DQRWKHU

TH QRWH UHVW + TH QRWH + TH QRWH DXGLR H[DPSOH ! KWWS JRR JO *\W +[

QRWH UHVW QRWH DQG DQ QRWH
7KH RSSRVLWH RI WKH SUHYLRXV SDWWHUQ ,W LV FRXQWHG OLNH WKLV

__H DQG D __H DQG D __H DQG D __H DQG D

%HDW LV VNLSSHG QRW KHDUG RU SODHG \RX SOD\ ¤PH ¶I DQG ¤P DQG 7 ¶IKH ¤P DQG ¶I LV DQ HLJKW QRWH
VR LW LV KHOG IRU WKH GXUDWLRQ RI D LI \RX ¶UH SODLQJ D SLWFKHG QRWH ,I \RX ¶UH FODSSLQJ RU WDSSLQJ DOO WKLV WKHQ D LV WUHDWHG WKH VDPH ZD\ DV __ †† LW ¶V QRW SODHG

TH QRWH UHVW + TH QRWH + TH QRWH DXGLR H[DPSOH ! KWWS JRR JO VL T*

QRWH UHVW HLJKW DQG D QRWH
$OLWWOH ELW WULFNLHU WKDQ WKH SUHYLRXV RQHV :HKDYH D QRWH UHVW IROORZHG E\ DQ TH QRWH DQG D TH QRWH ,W LV FRXQWHG OLNH WKLV

__H DQG D __H DQG D __H DQG D __H DQG D

¤PH ¶I LV DQ HLJKW QRWH KHUH DQG LI \RX ¶UH SODLQJ D SLWFKHG QRWH LW QHHGV WR ODVW XQWLO ¤P D ¶I

TH QRWH UHVW + TH QRWH + TH QRWH DXGLR H[DPSOH ! KWWS JRR JO)H8;*

'RWWHG QRWH UHVW DQG D TH QRWH
1RZ ZH KDYH D GRWWHG TH QRWH UHVW DQG D QRWH 6R ZH ¶UH MXVW SODLQJ RQ WKH ODVW RII EHDW ¤P D ¶I ,W LV FRXQWHG OLNH WKLV

___H__DQG_D___H__DQG_D___H__DQG_D___H__DQG_D

WKQRWHUHVW † WKQRWHDXGLRH[DPSOH ! KWWS JRRJO.RZP0JU

QRWHWKUHVWDQGDGRWWHG WK

7KH RSSRVLWH RI WKH SUHYLRXV RQH 1RZ D WK UHVW LV IROORZHG E\ D GRWWHG ,W LV FRQWHG OLNH WKLV

__H DQG D __H DQG D __H DQG D __H DQG D

,Q WKLV EDU WKH ▫P H ▫I QRWH LV KHOG IRU RI WKH EDU ZKLOH DQG DUH QRW SOD\HG RU KHDUG DW DOO ,I\RX ▫UH SOD\LQJ D QRWH ZLWK D SLWFK RQ ▫P H ▫I WKHQ WKLV QRWH VLQFH LW LV D GRWWHG

HLJKW QRWH LV KHOG IRU WKH GXUDWLRQ RI ▫P DQG ▫I DQG ▫P D ▫I

QRWHUHVW † WKQRWH DXGLRH[DPSOH ! KWWS JRRJO 9I;I$

6\QFRSDWHG QRWHWULSOHWV

▫HHUH ZH KDYH WK QRWHWULSOHWV EXW ZLWK DQ QRWHWULSOHW UHVW RQ WKH PDLQ EHDW ,W LV FRXQWHG OLNH WKLV

__WULSOHW__WULSOHW__WULSOHW__WULSOHW

1RWH WKDW OLNH DQ QRWHWULSOHW RQH QRWHWULSOHW UHVW LV DOVR RI WKH EHDW ,Q PXVLF QRWDWLRQ DQG RQ WKH VWDII QRWHWULSOHW UHVW KDV WKH VDPH VPEROD DV WKH UHJXODU QRWHUHVW EXW LW LV FRQWDLQHG ZLWKLQ WKH EUDFNHWV WULSOHWV

$OVR QRWLFH WKH VXEWOH GLIIHUHQFH EHWZHHQ WKLV SDWWHUQ DQG SDWWHUQ DQG DQG KRZ EHDW VXEGLYLVLRQV DUH VSDFHG RXW GLIIHUHQWO\ 7KLV RQH VRXQGV PRUH OLNH D ZDOW]

6\QFRSDWHG WK QRWHWULSOHWV DXGLRH[DPSOH ! KWWS JRRJO 5:*]H

%DU 5DQGRP 6HTXHQFH ([HUFLVH

+HUH ▫V DQRWKHU UDQGRP VHTXHQFH RI UK\WKPV RU PLQL SDWWHUQV VKRZQ VR IDU WKLV WLPH LQFOXGLQJ V\QFRSDWLRQ $V ZLWK WKH ([HUFLVH \RXU WDVN LV WR OLVWHQ DQG ILJXUH RXW ZKLFK UK\WKPV DUH XVHG LQ DOO EDUV $JDLQ WKHUH ZLOO WKH FRUUHFW DQVZHU XQGHU WKH &KHDW 6KHHW VHFWLRQ

%DU 6HTXHQFH ([HUFLVH DXGLRH[DPSOH ! KWWS JRRJO .Z4

1RWH WKDW ERWK ([HUFLVH DQG ([HUFLVH VHTXHQFHV DUH QRW PHDQW WR EH VXSHU SUHFLVH DQG ZKDW ▫V PRUH WKH\ ▫UH FRPSOHWHO\ UDQGRP KHQFH QRW YHU\ PXVLFDO 7KLV LV GRQH LQWHQWLRQDOO\ WR PDNH LW OHVV REYLRXV DQG PRUH GLIILFXOW DQG WR VKRZ

KRZ \RX FDQ UHFRJQL]H SDWWHUQV DQG H[WUDFW WKHP IURP D UDQGRP VHTXHQFH RI

QRWHV 7KLV ZLOO JUHDWO\ KHOS ZLWK WUDQVFULELQJ UK\WKP ILJXULQJ LW RXW E\ HDU IURP VRQJV DQG RWKHU PXVLFDO FRPSRVLWLRQV

$IWHU ILJXULQJ WKLV RXW \RXU WDVN LV WR FRPH XS ZLWK \RXU RZQ EDU VHTXHQFH RI SDWWHUQV WKDW \RX OLNH EXW WKLV WLPH LQFOXGH DQ\ RI WKH V\QFRSDWHG SDWWHUQV \RX OHDUQHG

<RX FDQ QRZ KRSHIXOO\ VHH KRZ FRPELQLQJ DOO WKHVH EHDW VXEGLYLVLRQV LV QRW GLIILFXOW DQG LW JLYHV JUHDW SRVVLELOLWLHV IRU ZKDW\RX FDQ H[SUHVV UK\WKPLFDOO\ $OO WKHVH SDWWHUQV DUH IXQGDPHQWDO DQG DUH XVHG PRUH RU OHVV RIWHQ LQ SUDFWLFH KRZHYHU WKH\DUH QRW H[KDXVWLYH † \RX FDQ GHULYH PRUH PLQL SDWWHUQV XVLQJ WKH VXEGLYLVLRQV \RX OHDUQHG OLNH FRPELQLQJ SLHFHV RI D SX]]OH $V DQ H[WUD FKDOOHQJH\RX FDQ WU\ WR FRPH XS ZLWK\RXU RZQ UK\WKP EORFNV

3DUW

0RUH :D\V RI &UHDWLQJ 0RYHPHQW LQ 0XVLF

7LPEUH 7RQH

$ FRPSRVHU RU SHUIRUPHU FDQ XVH QRWH VHOHFWLRQ WR EXLOG DQG UHOHDVH WHQVLRQ WR
FUHDWH PRYHPHQW 7KH\ FDQ DOVR XVH DV ZH KDYH VHHQ QRWH GXUDWLRQ ++ E\
PDQLSXODWLQJ WLPH WKH\ DUH DEOH WR DFKLHYH DOO PDQQHU RI FRPSOLFDWLRQV 7KHUH
DUH KRZHYHU RWKHU ZD\V RI PRYLQJ WKURXJK PXVLFDO VSDFH RWKHU D[HV RWKHU
WRROV RWKHU YHKLFOHV 2QH RI WKHVH LV WLPEUH RU WRQH FRORU

7LPEUH DQG WRQH UHIHU QRW WR WKH SLWFK RI D VRXQG DQG QRW WR LWV YROXPH EXW WR
ZKDW WKH VRXQG VRXQGV OLNH 7KH\ DUH WKH FKDUDFWHU RU WKH IRUP RI D VRXQG WKH
FRORU RU TXDOLW\ RI D VRXQG

7KRXJK WKH\ DUH RIWHQ XVHG LQWHUFKDQJHDEO\ ΔWLPEUH ◌ DQG ΔWRQH ◌ DUH
VRPHWLPHV
XVHG WR UHIHU WR GLIIHUHQW IHDWXUHV RI D VRXQGV FRORU

,Q WKHVH FDVHV WKH WLPEUH RI D VRXQG LV LQGH[HG WR ZKDW HYHU LQVWUXPHQW WKH
VRXQG
LV SURGXFHG ZLWK ++ DYLROLQ ªV $ QRWH LV GLIIHUHQW IURP D VD[RSKRQH ªV $ DQG WKH
GLIIHUHQFH EHWZHHQ WKRVH WZR VRXQGV LV WKH WLPEUH

7KH WRQH RQ WKH RWKHU KDQG LV WKH VSHFLILF WRQDO TXDOLW\ RI WKH VRXQG FRPLQJ RXW
RI WKDW LQVWUXPHQW DIIHFWHG E\ WKH FRPSRVLWLRQ RI WKH LQVWUXPHQW WKH
WHFKQLTXH
WKH DPSOLILFDWLRQ DQG DQ\ HIIHFWV XVHG

,Q JHQHUDO WKH WLPEUH RU WKH WRQH RI D VRXQG DQG KHUH ZH DUH LPDJLQLQJ WKDW
WKRVH WZR WKLQJV DUH WKH VDPH LV RQH RI WKH ZD\V D FRPSRVHU RU SHUIRUPHU FDQ
FRQWURO WKH ZD\ D SLHFH RI PXVLF IHHOV 7HQVLRQ LV EXLOW DQG UHOHDVHG E\ ZD\ RI
WLPEUH MXVW DV PXFK DV E\ ZD\ RI SLWFK RU GXUDWLRQ

'\QDPLFV

'\QDPLFV UHIHU WR WKH YROXPH RI D VRXQG DV ZHOO DV WR KRZ WKDW YROXPH LV H[SUHVVHG GRHV LW FRPH RQ TXLFNO\ GRHV LW OLQHU HWF

7KH G\QDPLF PRYHPHQW LQ D SLHFH RI PXVLF †† JHWWLQJ ORXGHU JHWWLQJ VRIWHU LQFUHDVLQJ RU GHFUHDVLQJ WKH VXVWDLQ DWWDFN RU GHFD\ RI WKH WRQHV LQ WKDW SLHFH ††
FRQWULEXWH WR WKH RYHUDOO VHQVH RI GUDPD DQG WHQVLRQ WKH SURSDJDWH PXVLFDO
PRYHPHQW LQ MXVW DV SURIRXQG D ZD\ DV WKH WLPEUH WKH GXUDWLRQ DQG WKH SLWFK RI WKH VRXQGV GR

3OD\LQJ ZLWK G\QDPLFV DQG SKUDVLQJ WKH SK\VLFDO ZD\ LQ ZKLFK D PXVLF OLQH LV SKUDVHG SOD\HG LV LQWULQVLFDOO\ UHODWHG WR ZKDW PDN\FDOO ΔSOD\LQJ ZLWK WKH IHHO ÿ

&RQVRQDQFH DQG 'LVVRQDQFH

,W LV RQH WKLQJ WR NQRZ KRZ WR PDNH PXVLF VRXQG JRRG †† VRXQG QLFH SOHDVLQJ HDV\ WR OLVWHQ WR ,W LV RQH WKLQJ WR EH DEOH WR SOD\ FRQVRQDQW PXVLF PXVLF WKDW VRXQGV OLNH UHVROXWLRQ WKDW WHQGV WRZDUG UHGXFHG WHQVLRQ EXW LW LV DQRWKHU WR EH
DEOH WR WUXO\ FUHDWH PRYHPHQW LQ D SLHFH

5HDO PRYHPHQW UHTXLUHV WKDW PRUH RIWHQ WKDQ QRW GLVVRQDQW VRXQGV DUH PDGH ††
WKDW LV VRXQGV WKDW WHQG WRZDUGV WHQVLRQ VRXQGV WKDW DUH GLIILFXOW VXUSULVLQJ
HYHQ KDUVK

0DNLQJ XVH RI KDUPRQLF DQG PHORGLF LGHDV WKDW SURPRWH GLVVRQDQFH SOD\LQJ RQ WKH UK\WKP RI D VRQJ DQG XVLQJ VQFRSDWLRQ LQ XQH[SHFWHG ZD\V XVLQJ WLPEUH WRQH DQG G\QDPLFV WR FUHDWH WHQVLRQ 7KHVH DUH DOO ZD\V RI KHOSLQJ WR SURGXFH PRYHPHQW LQ PXVLF

'UDPD

0XVLF LV D ODQJXDJH DQG D SLHFH RI PXVLF LV D QDUUDWLYH 7KHUH LV FKDQJH ULVLQJ DQG IDOOLQJ DFWLRQ 7KHUH DUH FOLPD[HV 7KHUH LV GHYHORSPHQW 7KHUH DUH SHULRGV RI WHQVLRQ DQG SHULRGV RI UHOHDVH 7KHUH LV GUDPD

,W LV QHFHVVDU\ WR XVH DOO RI WKH WRROV DW \RXU GLVSRVDO WR FUHDWH ZKDWHYHU NLQG RI
GUDPD \RX DUH WU\LQJ WR FUHDWH ,W LV SRVVLEOH WR UHPDLQ PRVWO\ DW WKH OHYHO RI
KDUPRQ\ DQG PHORG\ FUHDWLQJ PRYHPHQW ZLWK QRWH VHOHFWLRQ PRYLQJ DQG
FKDQJLQJ KDUPRQLF PDWHULDO HYHQ SHUKDSV DEDQGRQLQJ KDUPRQLF VWUXFWXUHV DOO
WRJHWKHU DV LQ VRPH IUHH LPSURYLVDWLRQ DQG PRGHUQ FODVVLFDO PXVLF

%XW LW LV DOVR SRVVLEOH WR XVH WLPH WRQH WLPEUH DQG G\QDPLFV WR WHOO D VWRU\ WR
PRYH DQ DXGLHQFH E\ PRYLQJ WKH VRXQG †† SXVKLQJ DLU SXVKLQJ ZDYHV SXVKLQJ
IHHOLQJV 0RYLQJ FKDQJLQJ GUDPDWL]LQJ

([WHQGHG 7HFKQLTXHV

,W LV ZRUWK PHQWLRQLQJ EULHIO\ WKDW WKHUH DUH ZD\V RI FUHDWLQJ GUDPD WKDW JR
EH\RQG WUDGLWLRQDO WHFKQLTXHV ,W LV DOZD\V SRVVLEOH WR SOD\ \RXU LQVWUXPHQW RU
WR
FRPSRVH IRU DQ LQVWUXPHQW LQ ZD\V WKDW DUH QRQ VWDQGDUG WKDW ZHUH QHYHU LQ
WKH
EHJLQQLQJ LQWHQGHG IRU WKDW LQVWUXPHQW

$ VD[RSKRQH SOD\HU FDQ SOD\ DUWLILFLDOO\ KLJK RU FDQ SURGXFH ULFK KDUPRQLFV
WKH\ FDQ RYHUEORZ WKH\ FDQ EUHDWKH DQG ZKLVSHU WKH\ FDQ VSHDN RU \HOO $
JXLWDULVW FDQ XVH D ERZ FDQ SOD\ PXWHG QRWHV RU KDUPRQLFV FDQ VFUDSH WKH
VWULQJV HYHQ XVLQJ D WUHPROR EDU LV D NLQG RI H[WHQGHG WHFKQLTXH FDQ SOD\
GUXPV RQ JXLWDU FKHFN RXW VRPH 7RPP\ (PPDQXHO GUXP VRORV RU JXLWDU OLNH
SLDQR $ SLDQR SOD\HU FDQ LQVHUW REMHFWV LQWR WKHLU VWULQJV FKDQJLQJ WKH WLPEUH RI
WKHLU LQVWUXPHQW 7KHUH DUH DOZD\V SRVVLELOLWLHV

,Q VRPH IRUPV RI PXVLF PRVW QRWDEO\ DYDQWJDUGH H[SHULPHQWDO DQG ΔIUHH ÷
PXVLF H[WHQGHG WHFKQLTXHV DUH XVHG WR PDQLSXODWH WKH VWRU\ WKDW D SLHFH RI
PXVLF WHOOV %XW VRPH RI WKHVH WHFKQLTXHV VXFK DV RQ WKH JXLWDU WUHPROR EDU
XVH HIIHFW XVH DQG DUWLILFLDO KDUPRQLFV DUH GHHSO\ D SDUW RI PDLQVWUHDP PXVLF
DQG ZKDWHYHU WKH PXVLF RU WKH LQVWUXPHQW \RX SOD\ XQGHUVWDQGLQJ H[WHQGHG
WHFKQLTXHV PHDQV KDYLQJ RQH PRUH ZD\ RI WHOOLQJ D VWRU\

3DUW

3XWWLQJ0XVLFDO6WUXFWXUHV7RJHWKHU

7KH ILUVW VWHS WRZDUG EXLOGLQJ WKHRUHWLFDO PDVWHU\ LQ PXVLF LV OHDUQLQJ \RXU ZD\ DURXQG WKH JURXQG IORRU †† XQGHUVWDQGLQJ WKH IXQGDPHQWDO HOHPHQWV RI PXVLF WKH WKHRUHWLFDO VWUXFWXUHV WKDW ZH ZRUN ZLWK LQ PXVLF WKHRU\ DQG KRZ WKRVH VWUXFWXUHV ZRUN WRJHWKHU LQ VRPH EDVLF ZD\V 7KLV KRZHYHU LV RQO\ HQRXJK WR JHW \RX WR XQGHUVWDQG ZKDW PXVLF LV PDGH RI DQG QRW LQ DQ\ VHQVH KRZ PXVLF ZRUNV 8QGHUVWDQGLQJ PXVLF LV PRUH †† LQILQLWHO\ PRUH †† WKDQ XQGHUVWDQGLQJ WKH GLVFUHWH HOHPHQWV WKDW PDNH LW XS 0XVLF LV D PRYLQJ OLYLQJ SXOVLQJ ERG\ DQG MXVW OLNH RXU ERGLHV LWV V\VWHPV DUH LUUHGXFLEOH WR DQ\ VHW RI VLPSOH HOHPHQWV

7KH HQG JDPH LV PRUH WKDQ XQGHUVWDQGLQJ †† LW LV PDVWHU\ †† DQG WKDW FRPHV IURP EHLQJ DEOH WR PDQLSXODWH PXVLFDO VWUXFWXUHV SXWWLQJ WKHP WR ZRUN DQG PDNLQJ WKHP ZRUN IRU \RX LQ ZKDWHYHU ZD\ \RX ZRXOG OLNH 7KDW KRZHYHU LV D ORQJ ZD\ RII IRU PRVW SHRSOH ZKR DUH OHDUQLQJ PXVLF WKHRU\ IRU WKH ILUVW WLPH $ EDVLF LQWURGXFWLRQ LV QHHGHG ILUVW ZKLFK PRUH RU OHVV FRQWDLQV WZR SDUWV

$ UXQGRZQ RI WKH IRXQGDWLRQDO HOHPHQWV RI PXVLF WKHRU\ LWV EDVLF VWUXFWXUHV
FRYHUHG XS WR WKLV SRLQW

$ ZD\ WR SXW WKRVH VWUXFWXUHV WRJHWKHU LQ RUGHU WR JDLQ D JUHDWHU XQGHUVWDQGLQJ RI
ZKDW LV KDSSHQLQJ LQ WKH DFWXDO PDWHULDO DFW RI PXVLF PDNLQJ

7KDW VHFRQG WDVN LV ZKDW WKLV VHFWLRQ LV DERXW OHWWLQJ \RX LQ RQ VRPH RI WKH VHFUHWV RI PXVLFDO V\VWHPV VKRZLQJ \RX KRZ PXVLFDO HOHPHQWV DQG VWUXFWXUHV PDNH VHQVH WRJHWKHU DQG JHWWLQJ \RX UHDG\ IRU WKH QH[W VWHS ZKLFK LV D EURDGHU SHUVSHFWLYH †† D PRUH DGYDQFHG FRQYHUVDWLRQ DERXW KRZ WR PDQLSXODWH
WKHRUHWLFDO VWUXFWXUHV LQ \RXU RZQ SOD\LQJ DQG ZULWLQJ 7KH SRLQW RI WKLV VHFWLRQ LV QRW WR JHW \RX WKH ZKROH ZD\ WKHUH RQO\ WR JHW \RX PRYLQJ LQ WKH ULJKW GLUHFWLRQ

7R WKDW HQG ZH ZLOO GLVFXVV ILUVW D EURDG GLVWLQFWLRQ EHWZHHQ LPSURYLVDWLRQ DQG

FRPSRVLWLRQ ZLWK DQ HQH WRZDUG WKLQNLQJ DERXW KRZ LPSURYLVHUV DQG FRPSRVHUV

XVH PXVLF WKHRU\ VHFRQG D JHQHUDO WD[RQRP\ RI PXVLF WKHRU\ RU DW OHDVW RI KDUPRQ\ DV LW LV XQGHUVWRRG WKHRUHWLFDOO\ DQG WKLUG D VHW RI PXVLFDO LGHDV DQG VWUXFWXUHV WKDW DUH LQGLVSHQVDEOH LQ \RXU MRXUQH\ WRZDUG WKHRUHWLFDO PDVWHU\

:KDW LV D &RPSRVLWLRQ"

:H SUDFWLFLQJ PXVLFLDQV WDNH IRU JUDQWHG VR PDQ\ WKHRUHWLFDO REMHFWV DQG QRQH SHUKDSV PRUH WKDQ WKLV RQH ††† FRPSRVLWLRQ :H DVVXPH WKDW ZH NQRZ ZKDW LW PHDQV WR FRPSRVH VRPHWKLQJ DQG WKDW ZKDW ZH WKLQN RI DV FRPSRVLWLRQ LV ZKDW HYHU\RQH HOVH WKLQNV RI DV FRPSRVLWLRQ :H WKLQN WKHUH LV DQ HDV\ DQVZHU WR WKH TXHVWLRQ Δ:KDW LV D FRPSRVHU" ÷ DQG WKDW ZH NQRZ MXVW KRZ FRPSRVHUV PDNH XVH RI PXVLF WKHRU\\

,W ¶V ZRUWK EHJLQQLQJ ZLWK VRPHWKLQJ VLPSOH :KDW LV FRPSRVLWLRQ" :KDW GRHV LW PHDQ WR EH D FRPSRVHU" $W ILUVW JODQFH LW ORRNV OLNH LW ¶V MXVW D PDWWHU RI ZLOOIXO
FUHDWLRQ WR FRPSRVH LV WR FUHDWH LQWHQWLRQDOO\ $QG VR FRPSRVLQJ PXVLF EHLQJ D FRPSRVHU LV MXVW D PDWWHU RI EHLQJ VRPHRQH ZKR LQWHQWLRQDOO\ FUHDWHV VRXQG 7KDW KRZHYHU GRHVQ ¶W UHDOO\ FRYHU LW

)LUVW WKHUH LV QRQ FRPSRVLWLRQDO PXVLF VXFK DV LPSURYLVDWLRQ ZKLFK LV DOVR SUHVXPDEO\ FUHDWHG LQWHQWLRQDOO\ $QG VHFRQG WKHUH LV VRXQG WKDW LV FUHDWHG
LQWHQWLRQDOO\ ††† VXFK DV KRQNLQJ D FDU KRUQ ††† WKDW ZH ZRXOG QHYHU FDOO PXVLF 6R WKHUH KDV WR EH WZR WKLQJV DGGHG WR ZKDW ZH KDYH DOUHDG\ VDLG WKDW FRPSRVHUV ZULWH WKLQJV WKDW DUH PHDQW WR EH UHSHDWHG PRUH RU OHVV H[DFWO\ DV
WKH\ DUH ZULWWHQ DQG WKDW FRPSRVLWLRQV DUH PRUH WKDQ PHUH VRXQG

7KH ILUVW RI WKHVH WKLQJV LV VLPSOH HQRXJK ††† FRPSRVLWLRQV DUH UHSHDWDEOH ††† DQG DW OHDVW DW ILUVW EOXVK WKLV LV ZKDW VHSDUDWHV FRPSRVHUV IURP LPSURYLVHUV %XW WKH
VHFRQG WKLQJ ††† WKDW FRPSRVHG PXVLF LV PRUH WKDQ PHUH VRXQG ††† LV D OLWWOH PRUH FRPSOLFDWHG

$QG KHUH LV ZKHUH PXVLF WKHRU\ HQWHUV 0XVLF LW LV VDLG LV QRW VLPSO\ VRXQG EXW RUJDQL]HG VRXQG $QG ZKLOH WKLV GHILQLWLRQ LV LQ VRPH FDVHV WRR VLPSOH WR EH WUXH LW VHUYHV KHUH DV D JHQHUDO JXLGH :KHQ ZH WDONLDERXW WKH RUJDQL]DWLRQ RI VRXQG LQ D PXVLFDO VHQVH ZKDW ZH DUH WDONLQJ DERXW LV WKHRUHWLFDO VWUXFWXUHV ††† PRVW

EDVLFDOO\ KDUPRQ\ PHORG\ DQG UK\WKP 7KHVH DUH WKH WKLQJV WKDW PXVLFLDQV FUHDWH DQG DUH QRW VLPSO\ VRXQGV :H FUHDWH RUJDQL]DWLRQV DQG VWUXFWXUDO

DUUDQJHPHQWV RI VRXQGV WKDW DUH FRQVRQDQW RU GLVVRQDQW WKDW IROORZ VRPH
PHORGLF RUGHU KRZHYHU FRPSOH[DQG WKDW RFFXU LQ WLPH PRVW RIWHQ RI D UHJXODU SXOVH

6R WKLV LV ZKDW FRPSRVHUV GR †† LQWHQWLRQDOO\ FUHDWH UHSHDWDEOH PXVLFDO
VWUXFWXUHV $QG WKRVH VWUXFWXUHV FDQ EH GLVFXVVHG DQDO\]HG DQG HYHQ JHQHUDWHG
E\ PXVLF WKHRU\

,PSURYLVDWLRQ DV ,QWDQWDQHRXV &RPSRVLWLRQ

,I FRPSRVLWLRQ LV WKH LQWHQWLRQDO FUHDWLRQ RI UHSHDWDEOH PXVLFDO VWUXFWXUHV WKHQ LW
VKRXOG EH HDV\ HQRXJK WR NQRZ KRZ WR WKLQN DERXW LPSURYLVDWLRQ ,W VKRXOG EH WKH VDPH WKLQJ RQO\ QRZ UDWKHU WKDQ EHLQJ UHSHDWDEOH LW LV PHDQW WR EH SOD\HG RQO\ RQFH

%XW WKLV LV WRR HDV\ 6XUHO\ ZH FDQ LPDJLQH D FRPSRVHU ZULWLQJ D SLHFH WKDW LV RQO\ PHDQW WR EH SOD\HG RQFH DQG WKLV ZRXOGQ ¶W EH LPSURYLVDWLRQ $QG DOO RI WKLV WDNHV IRU JUDQWHG WKH LGHD WKDW WKH PXVLF WKDW LPSURYLVHUV LPSURYLVH LV WKH
VDPH WKLQJ RU PRUH RU OHVV WKH VDPH DV WKH PXVLF WKDW FRPSRVHUV FRPSRVH

,PSURYLVDWLRQ LQ JHQHUDO UHVLVWV WKH NLQG RI WKHRUHWLFDO DQDO\VLV WKDW ZDV
GHVLJQHG IRU FHQWXULHV IRU FRPSRVLWLRQ 7KLV LVQ ¶W EHFDXVH LPSURYLVHG PXVLF GRHVQ ¶W KDYH KDUPRQ\ PHORG\ DQG UK\WKP EXW EHFDXVH LW XVHV WKRVH WKLQJV GLIIHUHQWO\ WKDQ FRPSRVLWLRQ 7KH GLIIHUHQFH LV DOO DERXW WLPH

$ FRPSRVHU KDV WLPH †† WLPH WR WKLQN WLPH WR ZULWH WLPH WR DUUDQJH DQG UHDUUDQJH HGLW DQG UH HGLW $QG WKLV FKDQJHV WKH ZD\ WKH\ ZRUN ZLWK PXVLF WKHRU\ ,W ¶V OLNH SDLQWLQJ D SRUWUDLW IURP D SLFWXUH ZKLFK ZLOO QHYHU FKDQJH DQG QHYHU JR DZD\ †† FRPSRVHUV FDQ ZRUN DQG UHZRUN WKH YHU\ VDPH SDUWV RI D SLHFH XQWLO ZKDW LV OHIW LV D UHIOHFWLRQ RI LQ JHQHUDO ULFKO\ FRPSOH[WKHRUHWLFDO
VWUXFWXUHV

%XW DQ LPSURYLVHU GRHV QRW KDYH WLPH ,PSURYLVDWLRQ LV RIWHQ VDLG WR EH
LQVWDQWDQHRXV FRPSRVLWLRQ DQG ZKLOH DV ZH DUH VD\LQJ LW PD\ EH PLVOHDGLQJ WR FDOO LW D NLQG RI FRPSRVLWLRQ LW FHUWDLQO\ LV LQVWDQWDQHRXV 7KLV PHDQV WKDW WKH

ZD\ DQ LPSURYLVHU ZRUNV ZLWK WKHRU\ LV GLIIHUHQW 5DWKHU WKDQ SDLQWLQJ IURP D SKRWR WKH\ DUH SDLQWLQJ IURP D EULHI PHPRU\ †† D TXLFN LPDJH WKDW SDVVHV E\ WKHLU PLQG 7KLV PHDQV WKDW WKH\ FDQQRW SDXVH DQG UHIOHFW RQ WKH ZD\ WKH\ ·H UH
XVLQJ WKHRU\ WKH\ VLPSO\ KDYH WR XVH LW DQG WKH\ ·H YH JRW RQH FKDQFH WR GR VR

$Q LPSURYLVHU XVHG WKHRU\ LQ VKRUW DQG PQHPRQLF GHYLFHV :KDW ZH PHDQ E\ WKDW LV WKDW WKH\ KDYH PHPRUL]HG YDULRXV KDUPRQLF GHYLFHV DQG RWKHU WKHRUHWLFDO VWUXFWXUHV DQG WKH\ NQRZ MXVW KRZ WR XVH WKHP DSSO\ WKHP DOWHU
WKHP DQG FRPELQH WKHP 0XFK RI WKH WKHRUHWLFDO ZRUN LQ LPSURYLVDWLRQ LV GRQH EHKLQG WKH VFHQHV DQG ZHOO EHIRUH KDQG †† LQ WKH \HDUV RU GHFDGHV RI SUDFWLFH DQG VWXG\ 7KLV PHDQV WKDW WKHRU\ IRU LPSURYLVDWLRQ LVQ ·W TXLWH WKH VDPH DQLPDO DV
WKHRU\ IRU FRPSRVLWLRQ ,W FRQVLVWV RI DOO WKH VDPH VWUXFWXUHV EXW LWV XVH LV GLIIHUHQW

1RWH 5HODWLYLVP

$ URVH PD\ EH D URVH PD\ EH D URVH EXW D QRWH LV QRW D QRWH 1RW PHUHO\ WKDW LV

7KHUH LV VR PXFK PRUH WR DQ $ WKDQ EHLQJ D WRQH WKDW VRXQGV DW KHUW] ,Q PXVLF ZKDW PDWWHUV IDU PRUH WKDQ D WRQH ·V DEVROXWH SLWFK LV LWV UHODWLYH YDOXH
:KDW WKDW PHDQV LV WKDW DQ $ PD\ EH GLIIHUHQW LQ WKLV FDVH WKDQ LQ WKDW FDVH ,W PD\ DQG OLNHO\ ZLOO VHUYH GLIIHUHQW IXQFWLRQV $QG WKDW LV ZKDW PDNHV D QRWH †† LWV IXQFWLRQ QRW LWV GHILQLWLRQ 1RWH UHODWLYLVP PHDQV WKDW ZKDW D QRWH LV ZKDW LW
UHDOO\ LV LV VRPHWKLQJ WKDW UHOLHV RQ RWKHU QRWHV DQG WKDW LWV YDOXH LV DOZD\V
UHODWLYH

/HW ·V WDNH DQ H[DPSOH /HW ·V VD\ , DP SOD\LQJ LQ WKH NH\ RI (PLQRU DQG , SOD\ DQ $ PLQRU FKRUG 7KH $ RI WKDW $ PLQRU LV VHUYLQJ PXOWLSOH SXUSRVHV LW LV WKH QRWH RI WKH FKRUG , DP SOD\LQJ ZKLFK LV D PLQRU FKRUG LW LV WKH EDVV QRWH RI WKDW FKRUG DJDLQVW ZKLFK DOO RI WKH RWKHU QRWHV , DP SOD\LQJ DUH GHILQHG DQG LW LV WKH WKRQH LQ WKH (PLQRU VFDOH $OO RI WKHVH WKLQJV GHILQH ZKDW WKDW $ LV DW SDUWLFXODU WLPH

%XW QRZ LPDJLQH WKDW , DP SOD\LQJ LQ %E PDMRU DQG , DP SOD\LQJ D 'P FKRUG

,DPVWLOOSODLQJDQ$RQO\QRZLWLVGLIIHUHQW,WLVWKH QRWHRIWKHFKRUG,DP
SODLQJ ZKLFKLVDPLQ FKRUG LWLVQRWWKHEDVVQRWHRIWKDWFKRUG DQGLWLVWKH

VHYHQWK QRWH LQ WKH %E PDMRU VFDOH ,W LV HQWLUHO\ GLIIHUHQW DQG WKHUHIRUH LWV
IXQFWLRQ LQ WKHMH PXVLFDO VWUXFWXUHV LV IXQGDPHQWDOO\ GLIIHUHQW

7KH SRLQW LV WKDW QRWHV DUH UHODWLYH DQG WKDW WKLV LV WKH IRXQGDWLRQDO WUXWK RI
KDUPRQ\ 7R VWXG\ PXVLF WKHRU\ LV QRW WR VWXG\ D V\VWHP RI LPPRYDEOH REMHFWV
EXW WR VWXG\ D V\VWHP WKDW LV DOZD\V LQ PRYHPHQW WKDW LV FKDQJLQJ DQG EHFRPLQJ
QHZ DW HDFK PRPHQW 7KDW ¶V RQH RI WKH WKLQJV WKDW PDNHV LW VR KDUG WR EH D PXVLF
WKHRULVW ++ \RX DUH WULQJ WR FDSWXUH VRPHWKLQJ WKDW IXQGDPHQWDOO\ ZDQWV WR
HOXGH FDSWXUH

,Q WKH SURFHVV RI OHDUQLQJ WKHRU\ RQH RI WKH PRVW LPSRUWDQW WKLQJV \RX FDQ
UHDOL]H LV WKDW PXVLF LV PRYLQJ DQG WKDW KDUPRQ\ LV UHODWLYH 2QFH \RX EHJLQ WR
VHH WKDW QRWHV DUH GLIIHUHQW GHSHQGLQJ RQ WKHLU FKDQJLQJ IXQFWLRQV LW ZLOO
EH
HDVLHU WR SXW \RXUVHOI LQ WKH FRUUHFW KHDGVSDFH

+RZ &KRUGV)XQFWLRQ LQ D .H\

(YHU\ NH\ KDV VHYHQ EDVLF FKRUGV RQH IRU HDFK QRWH LQ WKH VFDOH (DFK RI WKHVH
FKRUGV KDV D IXQFWLRQ %XW IRU DOO VHYHQ RI WKHP WKHUH DUH RQO\ WKUHH EDVLF
IXQFWLRQV RQO\ WKUHH EDVLF JURXSV WRQLF GRPLQDQW DQG VXEGRPLQDQW

7RQLF FKRUGV DUH WKH PRVW VWDEOH DQG WKH\HVW VWDEOLVK D NH\ 7KH\ DUH WKH RQHV
WKDW
FKRUG SURJUHVVLRQV PRYH WR LQ RUGHU WR UHOHDVH WHQVLRQ 7KH\ DUH WKH ILUVW WKLUG
DQG VL[WK GHJUHHV RI ZKDWHYHU VFDOH LV DW KDQG

'RPLQDQW FKRUGV DUH WKH PRVW WHQVH DQG WKH\ ZDQW VWURQJO\ WR UHVROYH WR VRPH
WRQLF FKRUG 'RPLQDQW FKRUGV DUH WKH IDUWKHVW KDUPRQLFDOO\ DZD\ IURP WKH
WRQLF EXW WKDW PHDQV WKDW WKH\SRLQW EDFN WRZDUG WKH WRQLF DQG VR WKHLU
IXQFWLRQ
LV WR OHDG WKH SURJUHVVLRQ EDFN WR WKH NH\FHQWHU 7KHVH DUH WKH ILIWK DQG
VHYHQWK
GHJUHHV RI WKH VFDOH DQG DQ\FKRUGV EXLOW RQ WKRVH GHJUHHV

6XEGRPLQDQW FKRUGV DUH WKH FKRUGV WKDW HVWDEOLVK PRYHPHQW DZD\ IURP WKH
WRQLF DQG WRZDUG WKH GRPLQDQW EHIRUH WKH GRPLQDQW FKRUGV ZDQW WR UHVROYH
EDFN

WR WKH WRQLF FKRUGV 7RQLF FKRUGV HVWDEOLVK D NH\ ZKHUHDV VXEGRPLQDQW FKRUGV
PRYH DZD\ IURP WKDW NH\ 7KHVH FKRUGV DUH WHQVH EXW QRW LQ WKH VDPH ZD\ WKDW GRPLQDQW FKRUGV DUH DQG WKH\ WHQG WR PRYH WRZDUG GRPLQDQW FKRUGV DOWKRXJK

WKH\FDQ DOVR VZLWFK GLUHFWLRQV DQG PRYH EDFN WRZDUG WRQLF FKRUGV 7KHVH DUH WKH VHFRQG DQG IRXUWK GHJUHHV RI WKH VFDOH

/HW ¶V WDNH DQ H[DPSOH XVLQJ WKH NH\ RI &

,Q & 0DMRU DQG FKRUG EXLOW IURP WKH & PDMRU (PLQRU RU $ PLQRU WULDGV DUH FRQVLGHUHG WRQLF FKRUGV $OO RI WKHVH FKRUGV ZLOO HVWDEOLVK WKH NH\ FHQWHU

$Q\ FKRUGV EXLOW RQ WKH ' PLQRU RU) PDMRU WULDGV ZLOO PRYH DZD\ IURP & PDMRU DV D WRQLF 7KHVH DUH WKH VXEGRPLQDQW FKRUGV DQG WKH\ DUH DOZD\V RQ WKH VHFRQG DQG IRXUWK GHJUHHV RI WKH VFDOH

)LQDOO\ DQ\ FKRUGV EXLOW RQ WKH * PDMRU RU % GLPLQLVKHG WULDGV DUH GRPLQDQW FKRUGV 7KHVH DUH DOZD\V RQ WKH ILIWK DQG VHYHQWK GHJUHHV RI D VFDOH 7KHVH FKRUGV ZLOO HVWDEOLVK WKH PRVW WHQVLRQ EXW WKH\ ZLOO DOVR SRLQW ULJKW EDFN WR WRQLF
FKRUGV VLQFH WKH\ ZDQW WR UHVROYH LQ WKDW GLUHFWLRQ

+RZ 1RWHV)XQFWLRQ LQ D &KRUG

7KH QRWHV RI FKRUG IXQFWLRQ LQ SUHGLFWDEOH ZD\V MXVW OLNH WKH FKRUGV RI D NH\ 7KH EDVLF VWUXFWXUH RI FKRUG DW LWV VLPSOHVW WKH WULDG LV WKH PRVW VWDEOH SDUW RI
WKDW FKRUG ZLWK WKH DQG EHLQJ WKH PRVW FRQVRQDQW 7KLV LV ZK\ LW LV SRVVLEOH WR SOD\ QRWKLQJ EXW SRZHU FKRUGV DOVR NQRZQ DV ILIWKV DQG VRXQG JRRG

7KH LV D VWDEOH QRWH LQ D FKRUG EXW QRW DV VWDEOH DV WKH RU 7KH GRHV KRZHYHU VHUYH WR GHWHUPLQH ZKHWKHU WKH FKRUG LV PDMRU RU PLQRU

7KH ILIWK H[WHQVLRQ RI D WULDG LV D 7KLV LV WKH QH[W PRVW VWDEOH LQWHUYDO DIWHU WKH
DQG LW VHUYHV DV ZHOO WR FRORU WKH FKRUG DQG GHWHUPLQH LWV IDPLO\ ++ PDMRU PLQRU GRPLQDQW

7KH ODVW WKUHH H[WHQVLRQV ++ ++ GR QRW LQ JHQHUDO HVWDEOLVK WKH IRXQGDWLRQ RI WKDW FKRUG QRU GR WKH\ GHWHUPLQH ZKHWKHU LW LV D PDMRU PLQRU RU GRPLQDQW FKRUG 7KH\ DUH DOVR IDU OHVV VWDEOH WKDQ WKH RU QRWHV WKRVH IRXU DUH FDOOHG ΔFKRUG WRQHV ◊ SUHFLVHO\ EHFDXVH RI WKHLU VWDEOLOLW\ 7KHVH
H[WHQVLRQV GR KRZHYHU FRORU WKH FKRUG LQ GLIIHUHQW GLUHFWLRQV ++ WK D PLQRU VRXQGV TXLWH GLIIHUHQW WKDQ D PDM WK IRU LQVWDQFH

7\SHV RI +DUPRQ\

+DUPRQ\ LV DW RQFH WKH PRVW EDVLF DQG WKH PRVW DGYDQFHG FRQFHSW LQ PXVLF WKHRU\ ,W LV WKH EHGVWRQH RI ZKDW ZH WKLQN DERXW ZKHQ ZH WKHRUL]H DQG LW FDQ EH PDGH WR EH PRUH FRPSOH[WKDQ PRVW SHRSOH H[SHFW :KHQ ZH WDON DERXW
KDUPRQ\ ZH DUH WDONLQJ DERXW WKH ZD\ WKDW QRWHV KDQJ WRJHWKHU ZKHWKHU WKH\
DUH FRQVRQDQW RU GLVVRQDQW DQG ZKDW VRUWV RI VWUXFWXUHV WKH\ FDQ EH DUUDQJHG
LQWR :H DUH DOVR WDONLQJ DERXW DOO RI WKDW DWHPSRUDOO\ ††RXWVLGH RI WLPH)RU
KDUPRQ\ LW GRHVQ¶W PDWWHU KRZ ORQJ QRWHV DUH KHOG MXVW WKDW WKH\ DUH DOO KDQJLQJ
WRJHWKHU LQ D VWUXFWXUH

,W FDQ EH VDLG WKDW +DUPRQ\ FDQ EH HLWKHU

7RQDO
0RGDO
3RO\WRQDO
$WRQDO

+HUH¶V D EULHI RYHUYLHZ RI HDFK

7RQDO +DUPRQ\

0RVW RI WKH PXVLF LQ WKH :HVW LV ZKDW LV FDOOHG 7 ΔRQDO ÷ PXVLF DQG LW LV LQ WKH
SURYLQFH RI WRQDO KDUPRQ\ 7RQDO PXVLF LV PXVLF WKDW KDV D WRQLF RU D NH\ FHQWHU
††D QRWH WKDW DFWV DV WKH FHQWHU RI JUDYLW\ IRU WKH SLHFH RU IRU WKH SDUW RI
WKH
SLHFH \RX¶UH WDONLQJ DERXW $QG WRQDO KDUPRQ\ LV KRZ ZH XQGHUVWDQG WKH
KDUPRQ\ RI WRQDO PXVLF ††LW PDNHV VHQVH RI FKRUGV DQG VFDOHV UHODWLYH WR VRPH NH\ FHQWHU RU WRQLF 7RQDO KDUPRQ\ FDQ EH HLWKHU FKRUGDO VFDODU RU FKURPDWLF

&KRUGDO

&KRUGDO PXVLF LV PXVLF ZKRVH SULPDU\ KDUPRQLF YHKLFOH LV WKH FKRUG :H
DQDO\]H LW E\ DQDO\]LQJ WKH ZD\ WKDW WKH FKRUGV PRYH DQG LQWHUDFW ZLWK RQH
DQRWKHU 7KH PRVW EDVLF XQLW LQ FKRUGDO PXVLF LV WKH FKRUG DQG JHQHUDOO\ WKLV
PHDQV WKDW ZH DUH WDONLQJ DERXW WULDGV DQG WKHLU UHODWLRQVKLSV

6FDODU

6FDODU PXVLF LV PXVLF ZKRVH SULPDU\ KDUPRQLF YHKLFOH LV WKH VFDOH : H
XQGHUVWDQG WKLV PXVLF E\ DQDO\]LQJ WKH ZD\ WKDW QRWHV DQG FKRUGV DUH GHULYHG
IURP WKH VFDOHV WKDW FRQWDLQ WKHP 7KH PRVW EDVLF XQLW RI KDUPRQLF LQ VFDODU PXVLF LV D VFDOH UDWKHU WKDQ D FKRUG WKH ODWWHU EHLQJ GHULYHG DV D PHPEHU RI WKH IRUPHU 7KLV PHDQV WKDW JHQHUDOO\ZH DUH WDONLQJ DERXW VRPH VFDOH RU PRGH RU VHULHV RI VFDOHV DQG PRGHV UDWKHU WKDQ VRPH VHW RI WULDGV

&KURPDWLF

&KURPDWLF PXVLF LV VLPLODU LQ SULQFLSOH WR VFDODU PXVLF RQO\ WKH VFDOH WKDW LV
XVHG LV WKH WZHOYH FKURPDWLF VFDOH 7KLV PHDQV LQ WKHRU\ WKDW WKH PXVLF LV IUHH WR OHDYH WKH VSDFH RI WZRQDOLW\ DQG PRYH LQWR DWRQDO KDUPRQ\ VHH DWRQDO VHFWLRQ
EHORZ EXW LQ SUDFWLFH LW LV RIWHQ WLHG WR VRPH FHQWHU RI JUDYLW\

0RGDO YV 7RQDO +DUPRQ\

7RQDO PXVLF DVZH KDYH VDLG LV PXVLF LQ ZKLFK WKHUH LV D QRWH WKDW DFWV DV WKH FHQWHU RI JUDYLW\ 7KLV FDVH EH FKRUGDO RU VFDODU RU FKURPDWLF EXW LQ DOO RI WKRVH FDVHV WKHUH LV RQH QRWH WKDW ZHLJKV WKH PXVLF GRZQ DW DQ\ RQH WLPH 0RGDO PXVLF LV GLIIHUHQW ++ LW WDNHV D VFDOH RU PRGH DV D SODFH WR EHJLQ DQG WUHDWV DOO RI
WKH QRWHV LQ WKDW VFDOH DV WKH SRLQWV RI JUDYLW\ ,Q D VHQVH WKH HQWLUH VFDOH LV WKH
ΔNH\ ÷ RU ΔWRQLF ÷

3RO\WRQDOLW\

3RO\WRQDO KDUPRQ\ FDQ EH HLWKHU WRQDO RU PRGDO ,Q SRO\WRQDOLW\ PRUH WKDQ RQH NH\ FHQWHU LV HVWDEOLVKHG DW D JLYHQ WLPH 7KLV FDQ RFFXU WRQDOO\ DV ZKHQ PRUH WKDQ RQH QRWH LV XVHG DV D FHQWHU RI JUDYLW\ RU LW FDQ EH GRQH ZLWK PRGDO KDUPRQ\ ZKHQ PRUH WKDQ RQH PRGH LV XVHG DW RQH WLPH ,Q HLWKHU FDVH WKH UHVXOWLQJ KDUPRQ\ LV FRPSOH[DQG RIWHQ TXLWH GLVRQDQW

$WRQDO +DUPRQ\

,Q DWRQDO KDUPRQ\ WKHUH LV QR NH\ FHQWHU 7KLV PXVLF SRSXODUL]HG LQ WKH ZHVW LQ

WKH WK FHQWXU\ E\ FRPSRVHUV VXFK DV $UQROG 6FKRHQEHUJ DQG $QWRQ 9RQ
:HEHUQ WUHDWV DOO WRQHV DV WKRXJK WKH\ZHUH FHQWHUV RI JUDYLW\ 3ULYLOHJH LV

JLYHQ WR WRQHV QRW DV WKH\ LQWHUDFW ZLWK VRPH NH\ FHQWHU EXW DV WKH\ LQWHUDFW
ZLWK RQH DQRWKHU 7KLV PXVLF LV RIWHQ GLIILFXOW WR OLVWHQ WR EXW VRPH RI LW LV TXLWH
EHDXWLIXO

4XHVWLRQV WR 3RQGHU

1RZ WKDW ZH KDYH EHJXQ WR DVVHPEOH WKH EORFNV RI PXVLFDO VWUXFWXUHV LW LV WLPH WR PRYH WR WKH QH[W VWHS ,W LV WLPH WR PRYH WRZDUG WKH PDQLSXODWLRQ RI WKRVH
VWUXFWXUHV 7KLV LV ZKDW DGYDQFHG PXVLF WKHRU\ LV †† D ZD\ RI WKLQNLQJ DERXW WKH PDQLSXODWLRQ RI PXVLFDO VWUXFWXUHV <RX DOUHDG\ NQRZ WKH QDPHV RI WKLQJV \RX DOUHDG\ NQRZ WKH EHJLQQLQJV RI KRZ WKH\ ILW WRJHWKHU QRZ LW LV WLPH WR WDNH WKH QH[W DQG ELJJHVW VWHS WRZDUG PDVWHULQJ WKRVH VWUXFWXUHV 7KLV LV D QHYHU HQGLQJ SURFHVV DQG ZLOO FRQWLQXH IRU WKH UHVW RI \RXU OLIH

:KLOH \RX EHJLQ WKLV SURFHVV KHUH DUH WZR WKLQJV WR WKLQN DERXW ZKHUH KDUPRQ\ EHJLQV DQG WKH GHSWK RI WKH FKURPDWLF VFDOH

%HJLQQLQJ ZLWK D 6FDOH YV %HJLQQLQJ ZLWK D &KRUG DW WKH)RXQGDWLRQ

2QH TXHVWLRQ WKDW LV ZRUWK PXOOLQJ RYHU LV ZKHWKHU KDUPRQ\ EHJLQV ZLWK D FKRUG RU ZLWK D VFDOH ,Q WRQDO KDUPRQ\ ZH XQGHUVWDQG PRVW HYHU\WKLQJ LQ WHUPV RI FKRUGV DQG WKHLU IXQFWLRQV %XW LQ PRGDO KDUPRQ\ LW LV MXVW WKH RSSRVLWH †† HYHU\WKLQJ LV FDVKHG RXW LQ WHUPV RI VFDOHV DQG WKHLU IXQFWLRQV 6RUWLQJ RXW WKLV WDQJOH ZLOO JHW \RX WKDW PXFK FORVHU WR PDVWHU\

&KURPDWLF 6FDOH DV 2ULJLQ YV &KURPDWLF 6FDOH DV ([WHQVLRQ

7KH FKURPDWLF VFDOH FDQ EH D SRZHUIXO WRRO LI \RX DOORZ LW WR EH ,W FDQ EH VHHQ DV WKH PDVWHU VHW RI DOO H[WHQVLRQV †† D FKRUG RU VFDOH H[WHQGLQJ LQ HYHU\ GLUHFWLRQ
DV IDU DV LW ZLOO JR %XW LW FDQ DOVR EH VHHQ DV WKH RULJLQ WKH VFDOH IURP ZKLFK DOO RWKHUV DUH FXW 7KLV ZD\ RI VHHLQJ FKURPDWLFLVP LV GHFLGHGO\ PRGDO DQG PDNHV DOO PXVLF LQ D VHQVH FKURPDWLF PXVLF $JDLQ ILJXULQJ RXW KRZ WR WKLQN DERXW WKLV ZLOO KHOS \RX DV \RX PRYH IRUZDUG

3DUW

*RLQJ %H\RQG WKH)RXQGDWLRQV

)RU PDQ\ EHJLQQLQJ PXVLFLDQV LW LV WKH KDUGHVW WKLQJ LQ WKH ZRUOG MXVW WR ZUDS WKHLU KHDGV DURXQG WKH IRXQGDWLRQV RI PXVLF WKHRU\ 7R OHDUQ WR XQGHUVWDQG WKH
EXLOGLQJ EORFNV RI KDUPRQ\ PHORG\ DQG UK\WKP FKRUGV VFDOHV PRGHV DUSHJJLRV UK\WKPLF ILJXUHV PHORGLF SDWWHUQV HWF DQG WR OHDUQ WR PDNH VHQVH RI D VKHHW RI PXVLF †† WKHVH WKLQJV FDQ VHHP RYHUZKHOPLQJ %XW DV D VWXGHQW RI PXVLF SURJUHVVHV DQG WKDW LV ZKDW ZH DOO DUH VWXGHQWV RI PXVLF DOZD\V
OHDUQLQJ WKRVH WKLQJV VHHP OHVV DQG OHVV IRUHLJQ :KHUH RQFH WKHUH ZDV P\VWHU\ DQG RSDFLW\ WKHUH FRPHV D VHQVH RI FODULW\

&RQFHSWV VXFK DV PRGDOLW\ ZKLFK VHHPHG VR VWUDQJH DW ILUVW EHJLQ WR VHHP REYLRXV OHVV LQWHOOHFWXDOO\ WD[LQJ DQG DV WKLV RFFXUV WKH PXVLFLDQ SURJUHVVHV
7KHLU NQRZOHGJH LV HDVLHU DQG HDVLHU WR DSSO\ DQG LW EHFRPHV HDVLHU DQG HDVLHU WR
WKLQN WR EUHDWKH WR HPRWH RQ WKHLU LQVWUXPHQW 7KH LQVWUXPHQW LWVHOI QR ORQJHU
VHHPV XQZLHOG\ DQG LW QR ORQJHU DSSHDUV DV D PHGLXP WKURXJK ZKLFK H[SUHVVLRQ RFFXUV LQVWHDG LW LV WKDW RQ DQG LQ ZKLFK WKRXJKWV DQG IHHOLQJV DSSHDU 7KHRU\ KDSSHQV RQ RQH ¹V LQVWUXPHQW GLUHFWO\ ZLWKRXW DQ\ LQWHUPHGLDU\

%XW DV WKLV RFFXUV DV PDVWHU\ LV PRUH DQG PRUH D WKLQJ WKDW VHHPV DWWDLQDEOH
QHZ TXHVWLRQV HPHUJH ,W LV QR ORQJHU HQRXJK WR NQRZ IRU LQVWDQFH DOO IRXQGDWLRQDO VHYHQ QRWH VFDOHV ,W EHJLQV WR EH QHFHVVDU\ WR OHDUQ KRZ WR XVH
WKRVH VFDOHV †† KRZ DQG ZKHQ WR SOD\ ZKDW DQG ZKHUH ,W EHJLQV WR VHHP REYLRXV WKDW WKRVH VFDOHV ZRUN WRJHWKHU ZLWK WKH FKRUGV WKDW DUH E\ QRZ URWH
RQO\ LW LVQ ¹W FOHDU KRZ WKDW RFFXUV RU ZK\

,W EHJLQV WR VHHP DV WKRXJK QHZ FKRUGV QHHG WR EH FRQVWUXFWHG QHZ
FRPELQDWLRQV RI PHORGLF DQG KDUPRQLF SDWWHUQV QHHG WR GHULYHG QHZ ZD\V RI ZRUNLQJ ZLWK WRQDOLW\ QHHG WR EH HPSOR\HG DQG HYHQ QHZ ZD\V RI FRQFHLYLQJ RI

KDUPRQ\DOWRJHWKHUQHHGWREHXQGHUVWRRG2QO\LWLVQ¶WDWDOOFOHDUZKDWDQ\RI
WKDWPHDQV:KHQWKLVVWDUWVWRKDSSHQ††ZKHQLWLVQRORQJHUHQRXJKWRSRVVHVV
WKHEXLOGLQJEORFNVEXWUDWKHUWRNQRZKRZWRFRQVWUXFWWKLQJVRXWRIWKHP††
LW
LVWLPHIRUPRUHHGXFDWLRQ

7KH FRQWHQW WKDW OLHV DKHDG LV IRU LQWHUPHGLDWH DQG DGYDQFHG PXVLF WKHRU\ VWXGHQWV ZKR DOUHDG\ SRVVHVV WKH NQRZOHGJH QHFHVVDU\ WR XQGHUVWDQG PRUH RU
OHVV ZKDW PXVLFLDQV DUH GRLQJ ZKHQ WKH\ DUH SOD\LQJ :KDW WKLV VHFWLRQ ZLOO VWDUW WR DQVZHU LV

- :K\ DUH WKH\ SOD\LQJ WKDW ZD\"
- +RZ FDQ ZH PRYH IRUZDUG DQG XVH WKH VWUXFWXUHV RI KDUPRQ\ WR HVWDEOLVK QHZ ZD\V RI SOD\LQJ"
- +RZ FDQ ZH XQGHUVWDQG PRUH DQG PRUH FRPSOH[DQG VXEWOH PXVLF"
- +RZ FDQ ZH EHFRPH PRUH FRPSOHWH PXVLFLDQV EHWWHU FRPSRVHUV ULFKHU LPSURYLVHUV"

$QG PRVW LPSRUWDQWO\

- +RZ FDQ ZH XVH WKH NQRZOHGJH ZH KDYH DOUHDG\ JDLQHG"
- +RZ FDQ ZH FRPELQH ZKDW ZH NQRZ DQG KDYH SUDFWLFHG LQ QHZ DQG H[FLWLQJ ZD\V"
- +RZ FDQ ZH SHUKDSV OHDUQ WR PRYH EH\RQG WKH OLPLWV RI ZKDW ZH DOUHDG\ NQRZ HYHQ WR WKH SRLQW RI EUHDNLQJ ZKDW ZH WKRXJKW ZHUH VWHDGIDVW UXOHV LQ WKH SURFHVV"

7KLV LV IRU LQWHUPHGLDWH DQG DGYDQFHG SOD\HUV ZKR ZDQW WR OHDUQ WR WKLQN GLIIHUHQWO\ DERXW PXVLF ZLWK ZLGHU SHUVSHFWLYH

:KLOH JHDUHG WRZDUG LPSURYLVDWLRQ LW LV FHUWDLQO\ XVHIXO IRU WKH FRPSRVLQJ DUWLVW :KLOH GHULYHG ODUJHO\ IURP WKH KLVWRU\ RI MD]] IURP IRUZDUG LW DOVR SURYLGHV VXLWDEOH PHDQV WR DQDO\]LQJ WKH KDUPRQLF VWUXFWXUH RI VRPH RI WKH PRVW LPSRUWDQW FODVVLFDO SLHFHV IURP WKH ODWH DQG HDUO\ FHQWXULHV

:H ZLOO EHJLQ E\ GLVFXVVLQJ DQG UHYLVLQJ FKRUG SURJUHVVLRQV XQGHUVWRRG DV WKH DFWLYLW\ DQG DSSOLFDWLRQ RI LQGLYLGXDO FKRUGV :H ZLOO WKHQ TXLFNO\ PRYH WRZDUG GLVFXVVHV WKH SULQFLSOHV RI FKRUG VXEVWLWXWLRQV DQG UHKDUPRQL]DWLRQ EHIRUH
SDXVLQJ IRU D OHQJWK\ FRQYHUVDWLRQ DERXW LPSURYLVLQJ RYHU FKRUG SURJUHVVLRQV LQFOXGLQJ EXW QRW OLPLWHG WR WKH UHODWLRQVKLS EHWZHHQ FKRUGV DQG VFDOHV DQG WKH
FKRUG VFDOH V\VWHP RI LPSURYLVDWLRQ QRZ ZLGHO\ WDXJKW DW XQLYHUVLWLHV VXFK DV %HUNHOHH

7KDW ZLOO HQG WKH FRQYHUVDWLRQ DERXW ZKDW LV JHQHUDOO\ NQRZQ DV ΔWRQDO
KDUPRQ\ DQG WKH ILQDO FKDSWHUV ZLOO EH GHGLFDWHG WR XQGHUVWDQGLQJ ZD\V RI PRYLQJ EH\RQG VLPSOH WRQDOLW\ †† ILUVW LQ WHUPV RI PRGDO KDUPRQ\ DV
SLRQHHUHG E\ 0LOHV 'DYLV LQ MD]] DQG 'HEXVV\ LQ FODVVLFDO PXVLF DQG VHFRQG LQ

VWHUPV RI DWRQDO PXVLF DV SLRQHHUHG E\ 2UQHWWH &RHPDQ

6SHFLDO WUHDWPHQW ZLOO EH JLYHQ WR ZKDW LV VRPHWLPHV FDOOHG ΔIUHH PXVLF ÷ ZKLFK LV D IRUP RI LPSURYLVDWLRQ LQVSLUHG PRVW RIWHQ E\ WKH PRGDO KDUPRQ\ RI ODWH -RKQ &ROWUDQH UHFRUGLQJV DQG WKH DWRQDO KDUPRQ\ RI 2UQHWWH &ROHPDQ

)LQDOO\ WKH FKDSWHU RQ DWRQDOLW\ ZLOO FORVH ZLWK D VHFWLRQ RQ SODLQJ EH\RQG WUDGLWLRQDO PXVLFDO FDWHJRULHV E\ IRFXVLQJ RQ WLPEUH YROXPH VSHHG GHQVLW\ HWF UDWKHU WKDQ RQ KDUPRQ\ PHORG\ DQG UK\WKP DQG D VHFWLRQ RQ WKH VSLULWXDO DVSHFWV RI PRGDO DQG DWRQDO PXVLF

)HZ WKLQJV FDQ JLYH PRUH ODVWLQJ MR\ WKDQ WKH VXVWDLQHG PHGLWDWLRQ RQ DGYDQFHG PXVLF WKHRU\ 8QOLNH EDVLF WKHRU\ WKH ZRUOG RI DGYDQFHG KDUPRQ\ LV RQH RI LQWHUSUHWDWLRQ DQG FUHDWLYLW\ 7KHUH DUH QR FOHDU DQVZHUV DQG WKHUH DUH YHU\ IHZ
VLPSOH ZD\V RI XQGHUVWDQGLQJ DQ\ RI ZKDW ZH ZLOO GLVFXVV (YHU\WKLQJ KHUH H[LVWV LQ VKDGHV RI SHUVSHFWLYH

:KDW, DP SUHVHQWLQJ KHUH LV RQH ZD\ RI XQGHUVWDQGLQJ WKH SURJUHVVLRQ EHQRQG VLPSOH PXVLF WKHRU\ RQH ZD\ RI WKLQNLQJ DERXW KRZ WR PRYH IRUZDUG DQG EHQRQG WKH VDPH PXVLFDO SDWWHUQV \RX KDYH EHHQ SUDFWLFLQJ IRU ZKDW OLNHO\ VHHPV OLNH IRUHYHU 7KLV LV WKH SDWK WR WUXH FUHDWLRQ DQG LW LV SDYHG ZLWK
XQFHUWDLQW\ )RU WKDW UHDVRQ LW LV VRPHWLPHV KDUG WR PDNH VHQVH RI ZKHUH WR JR ZKDW WR WKLQN %XW LI \RX DOORZ \RXUVHOI WR EHFRPH LPPHUVHG LQ WKH VWXII RI DGYDQFHG PXVLF WKHRU\ WKDQ \RX ZLOO EH UHZDUGHG ZLWK D OLIHWLPH RI ULFK
FUHDWLRQ , LQYLWH \RX WR SXW LQ WKH HIIRUW ,W LV ZRUWKLW

&KRUG 3URJUHVVLRQV 3DUW

&KRUG SURJUHVVLRQV DUH WKH IRXQGDWLRQ RI PRVW WRQDO KDUPRQ\ ,Q MD]] IRU LQVWDQFH LW ZDV QRW XQWLO WKH V WKDW SODHUV EHJDQ WR PRYH PRGDO RU HYHQ VFDODU 7KH ZD\ WKDW SHRSOH ZURWH DQG SODHG ZDV PRUH RU OHVV HQWLUHO\ FKRUGDO $ FKRUG SURJUHVVLRQ DVVWDWHG EHIRUH LV VRPH VHULHV RU V\VWHP RI FKRUGV WKDW LQ JHQHUDO WHQGV WRZDUG VRPH WRQLF
&KRUG SURJUHVVLRQV DUH VLPSOH WKLQJV E\ QDWXUH 7KHUH DUH RQO\ D IHZ EDVLF SURJUHVVLRQV ZKLFK DUH WKHQ FRPELQHG PRYHG DURXQG DQG DOWHUHG DFFRUGLQJ WR RQO\ D IHZ EDVLF UXOHV 7KH IRXQGDWLRQ RI HYHU\ SURJUHVVLRQ LV D F\FOH †† PRYHPHQW DZD\ IURP DQG PRYHPHQW WRZDUG WKH WRQLF RU FHQWHU RI WKH NH\ 7KLV RFFXUV PRVW EDVLFDOO\ WKURXJK FDGHQFHV RI ZKLFK WKH PRVW IRXQGDWLRQDO LV WKH

9 , FDGHQFH LQ ZKLFK D GRPLQDQW VHYHQWK FKRUG LV SODFHG D ILIWK DERYH WKH PDMRU, FKRUG IROORZHG E\ WKDW FKRUG LWVHOI 0LQRU YHUVLRQV RI WKLV FDGHQFH H[LVW DV ZHOO 9 L 7KRXJK PDQ\ W\SHV RI FDGHQFHV H[LVW DQG GR PDQ\ GLIIHUHQW WKLQJV DOO RI WKHP VKDUH WKH VWUXFWXUH RI WKLV EDVLF RQH †† WKH\ DOO EXLOG WHQVLRQ
WKH 9 KHUH DQG WKH\ DOO UHOHDVH WKDW WHQVLRQ WKH , KHUH

$ VLPSOH FKRUG SURJUHVVLRQ FRQVLVWV RI D WRQLF FKRUG D VXEGRPLQDQW FKRUG D GRPLQDQW FKRUG WKDW IROORZV WKH VXEGRPLQDQW FKRUG DQG D WRQLF FKRUG WKDW UHVROYHV WKH GRPLQDQW FKRUG %DVLF H[DPSOHV RI WKLV DUH WKH ,9 9 , IRXQG LQ WKH EOXHV DQG WKH LL 9 , IRXQG LQ MD]] 0DQ\ YDULDWLRQV H[LVW EXW PRUH RU OHVV DOO RI WKH WLPH WKH \ IROORZ WKH VDPH VWUXFWXUH

%DVLF SURJUHVVLRQV DUH RIWHQ H[WHQGHG DFFRUGLQJ WR D VLPSOH PHFKDQLVP 7KH PDWKHPDWLFDO VWUXFWXUH RI D SURJUHVVLRQ LV XVHG WR JHW WKH SURJUHVVLRQ IURP VRPH FKRUG WR WKH ILUVW FKRUG LQ ZKDWHYHU SURJUHVVLRQ LV EHLQJ H[WHQGHG 7KLV VRXQGV FRPSOLFDWHG EXW LW ¶V UDWKHU VLPSOH

)LUVW \RX EHJLQ ZLWK D SURJUHVVLRQ †† IRU LQVWDQFH D LL 9 , LQ $0DMRU 7KRVH FKRUGV DUH %P ($0DM

7KHQ D SURJUHVVLRQ LV FKRVHQ IURP ZKLFK ZH ZLOO ERUURZ WKH PDWKHPDWLFDO

VWUXFWXUH /HW ¶V VD\ ZH XVH DQRWKHU LL 9 , :H XVH WKH VWUXFWXUH RI WKDW SURJUHVVLRQ D IRXUWK XS DQG WKHQ D ILIWK GRZQ WR VWDUW RQ WKH LLL RI $PDMRU DQG HQG RQ WKH LL ZKLFK ZLOO EH WKH EHJLQQLQJ RI WKH ILUVW LL 9 ,

6R WKH IXOO SURJUHVVLRQ ZLOO EH LLL YL LL 9 , RU & P) P %P ($ 0DM 0RUH FRPSOH[SURJUHVVLRQV VXFK DV WKLV RQH FDQ EH IXUWKHU FRPELQHG ZLWK RWKHU
SURJUHVVLRQV E\ XVLQJ LW RU DQRWKHU SURJUHVVLRQ DV WKH EDVLV IRU H[WHQGLQJ
SURJUHVVLRQV MXVW OLNH WKH LL 9 , KHUH ZDV XVHG DV WKH EDVLV IRU H[WHQGHG WKH
SURJUHVVLRQ ZH VWDUWHG ZLWK

$GGLWLRQDOO\ SURJUHVVLRQV FDQ EH PDGH PXFK PRUH FRPSOH[E\ PDNLQJ XVH RI QHZ WRQDO FHQWHUV $ LL 9 , FDQ EH SODFHG LQ $ PDMRU IROORZHG LPPHGLDWHO\ E\ D ,9 YLL , LQ *0DMRU DQG VR RQ 7KLV HVWDEOLVKHV D QHZ WRQDO FHQWHU HDFK WLPH WKH SURJUHVVLRQ LV UHRULHQWHG PDNLQJ LPSURYLVLQJ RYHU WKHVH FKDQJHV VRPHZKDW FKDOOHQJLQJ ,W LV KRZHYHU FRPPRQ SUDFWLFH LQ MD]]

)LQDOO\ WKHUH LV FKRUG VXEVWLWXWLRQ :H KDYH DOUHDG\ WDONHG DERXW WKLV D ELW EXW
ZH ZLOO EH GLVFXVVLQJ WKLV DW OHQJWK LQ WKH QH[W VHFWLRQ XVLQJ WKH LGHD WR EHJLQ WKLQNLQJ DERXW KRZ WR LPSURYLVH ZLWK DQG RYHU FKRUG SURJUHVVLRQV)RU QRZ LW LV HQRXJK WR VD\ WKDW FKRUGV FDQ EH H[FKDQJHG IRU RWKHU FKRUGV LQ D SURJUHVVLRQ 7KHVH QHZ FKRUGV ZLOO VHUYH WKH VDPH KDUPRQLF IXQFWLRQ LQ WKH SURJUHVVLRQ EXW

WKH\ ZLOO KDYH GLIIHUHQW KDUPRQLF PDWHULDO LQ JHQHUDO VLQFH WKH\ DUH GLIIHUHQW
FKRUGV

3HUKDSV WKH PRVW EDVLF H[DPSOH RI FKRUG VXEVWLWXWLRQ LV FKRUG IDPLO\
VXEVWLWXWLRQ LQ ZKLFK RQH FKRUG IURP WKH VDPH NH\ LV VXEVWLWXWHG IRU DQRWKHU
FKRUG RI WKH VDPH IDPLO\ D WRQLF FKRUG IRU D WRQLF FKRUG D GRPLQDQW FKRUG IRU D GRPLQDQW FKRUG $QRWKHU FRPPRQ FKRUG VXEVWLWXWLRQ LV WKH WULWRQH VXEVWLWXWLRQ
LQ ZKLFK D GRPLQDQW $WK FKRUG LV VXEVWLWXWHG D WULWRQH DZD\ IURP WKH RULJLQDO
GRPLQDQW$WK FKRUG

&KRUG 6XEVWLWXWLRQV

:KHQ FRPSRVHUV ZRUN ZLWK SURJUHVVLRQ RU ZKHQ LPSURYLVHUV SOD\ RYHU WKHP
WKH\ DUH JHQHUDOO\ WKLQNLQJ LQ WHUPV RI FKRUG VXEVWLWXWLRQV $ FKRUG VXEVWLWXWLRQ
LV ZKHQ RQH FKRUG LV UHSODFHG E\ DQRWKHU DQG LW DOORZV XV WR H[WHQG D
SURJUHVVLRQ LQGHILQLWHO\

&KRUG VXEVWLWXWLRQV DUH DW RQFH WKH HDVLHVW WKLQJ WR WKLQN DERXW DQG WKH PRVW
FRPSOLFDWHG ,Q WKH PRVW EDVLF VHQVH ZKDW D FKRUG VXEVWLWXWLRQ LV LV D
UHKDUPRQL]DWLRQ DQG VLQFH UHKDUPRQL]DWLRQV DUH WKH IRXQGDWLRQV IRU PHORGLF YDULDWLRQ FKRUG VXEVWLWXWLRQV DUH WKH PRVW EDVLF ZD\ RI JHQHUDWLQJ QHZ LGHDV
ERWK RQ WKH IO\ DQG LQ D FRPSRVLWLRQ %XW WKH\ DUH DOVR VRPHWLPHV WHUULEO\ FRPSOLFDWHG DQG SHUIRUPLQJ WKHP LPSURYLVDWLRQDOO\ FDQ EH H[WUHPHO\
FKDOOHQJLQJ 0RVW RI ZKDW DGYDQFHG SOD\HUV WKLQN DERXW ZKHQ WKH\ DUH WKLQNLQJ DERXW LPSURYLVLQJ ZLWK D FKRUG SURJUHVVLRQ LV VRPHWKLQJ KDYLQJ WR GR ZLWK FKRUG VXEVWLWXWLRQV

:H KDYH DOUHDG\ VDLG WKDW D FKRUG VXEVWLWXWLRQ KDSSHQV ZKHQ ZH UHSODFH RQH FKRUG ZLWK DQRWKHU GLIIHUHQW FKRUG WKDW VHUYHV D VLPLODU IXQFWLRQ LQ WKH

SURJUHVVLRQ 2QH YHU\ EDVLF ZD\ RI GRLQJ WKLV LV DV ZH KDYH VHHQ WR UHSODFH D FKRUG LQ D SURJUHVVLRQ ZLWK DQRWKHU FKRUG RI WKH VDPH IDPLO\ ++ D WRQLF IRU D WRQLF D GRPLQDQW IRU D GRPLQDQW D VXEGRPLQDQW IRU D VXEGRPLQDQW %XW WKHUH
DUH PDQ\ RWKHU ZD\V RI VXEVWLWXWLQJ FKRUGV VRPH RI ZKLFK DUH PXFK PRUH DGYDQFHG

)RU HDFK ZD\ RI VXEVWLWXWLQJ D FKRUG WKHUH LV DQ RSSRUWXQLW\ WR ERWK H[WHQG D
SURJUHVVLRQ FRPSRVLWLRQDOO\ DV ZH JHQHUDWH QHZ SURJUHVVLRQV IURP DQ H[LVWLQJ

SURJUHVVLRQ DQG D ZD\ WR UHKDUPRQL]H D VXEVWLWXWLRQ LPSURYLVDWLRQDOO\ DV ZH FRPH XS ZLWK QHZ FKRUGV DQG PHORG\ OLQHV WR SOD\ RYHU H[LVWLQJ FKRUG
SURJUHVVLRQV

%HQRQG FKRUG IDPLO\ VXEVWLWXWLRQ WKHUH DUH D IHZ RWKHU EDVLF ZD\V WR VXEVWLWXWH
FKRUGV 2QH RI WKHP ZH KDYH DOUHDG\ PHQWLRQHG WULWRQH VXEVWLWXWLRQ 7KLV LV ZKHQ D GRPLQDQW VHYHQWK FKRUG LV VXEVWLWXWHG D WULWRQH DSDUW IURP DQ H[LVWLQJ
GRPLQDQW VHYHQWK FKRUG

7KHUH LV QR WULWRQH VXEVWLWXWLRQ HTXLYDOHQW IRU PDMRU DQG PLQRU VHYHQWK FKRUGV
EXW WKHUH LV VRPHWKLQJ WKDW ZRUNV IRU WKRVH FKRUGV LQ D VLPLODU ZD\ $ PLQRU WULDG RU PLQRU VHYHQWK FDQ EH VXEVWLWXWHG WKURXJK DOO VWHSV EHORZ D PDMRU WULDG RU
PDMRU VHYHQWK DQG D PDMRU WULDG RU VHYHQWK FDQ EH VXEVWLWXWHG WKURXH KDOI VWHSV
DERYH D PLQRU WULDG RU VHYHQWK 7KLV LV VRPHWLPHV FDOOHG D UHODWLYH PLQRU RU PDMRU VXEVWLWXWLRQ DQG LW DOPRVW DOZD\V ZRUNV ZHOO

%HQRQG WKRVH VLPSOH PHWKRGV RI VXEVWLWXWLQJ FKRUGV WKHUH DUH DOPRVW OLPLWOHVV
RSWLRQV 7KHUH DUH KRZHYHU D IHZ EDVLF UXOHV ,Q HVVHQFH DQ HDVLHU ZD\ WR VKRZ FKRUG VXEVWLWXWLRQV PHWKRGV LV E\ GLYLGLQJ WKHP LQWR WKRVH WKDW FKDQJH DQG GRQ
W
FKDQJH WKH FKRUG V VURRW

1RW &KDQJLQJ WKH 5RRW

4XDOLW\ $GGLWLRQ

2QH HDV\ ZD\ WR VXEVWLWXWH D FKRUG LV WR VLPSO\ DOWHU WKDW FKRUG NHHSLQJ LWV EDVV
QRWH 7KLV LV QRW VR PXFK VXEVWLWXWLRQ DV ZH FRPPRQO\ WDON DERXW LW EXW LW LV
VWULFWO\ VSHDNLQJ D ZD\ RI UHSODFLQJ RQH FKRUG ZLWK DQRWKHU

7KH PRVW EDVLF ZD\ WR DOWHU D FKRUG LV WKURXJK TXDOLW\ DGGLWLRQ LQ ZKLFK WKH FKRUG UHPDLQV LQWDFW EXW LV DGGHG WR $QHZ TXDOLW\ LV LQWURGXFHG)RU LQVWDQFH D
0DM FKRUG FDQ EH FRPH D 0DM FKRUG E\ DGGLQJ D QRWH WR LW

4XDOLW\6XEWUDFWLRQ

$QRWKHU HDV\ ZD\ WR DOWHU D FKRUG ZLWKRXW XVXDOO\ FKDQJLQJ LWV URRW LV WR VXEWUDFW D TXDOLW\IURP LW $PLQ FKRUG FDQ EHFRPH D PLQ WULDG D FKRUG RU D PLQ FKRUG ZLWK WKH WK RPLWWHG ,I\RX DUH GHDOLQJ ZLWK DQ H[WHQGHG FKRUG WKHQ \RX FDQ DOZD\V UHPRYH WKH H[WHQVLRQV DQG HQG XS ZLWK D WK FKRUG

7R VXPPDUL]H WKH VLPSOHVW NLQG RI FKRUG VXEVWLWXWLRQ LV WKURXJK TXDOLW\ DGGLWLRQ
DQG VXEWUDFWLRQ ,Q HVVHQFH RU PRUH TXDOLWLHV DUH DGGHG WR RU WDNHQ DZD\ IURP D FKRUG DQG WKH UHVXOWLQJ FKRUG LV SXW LQ SODFH RI WKH RULJLQDO $QRWKHU H[DPSOH D & FDQ EHFRPH D & RU D & FDQ EHFRPH D &DGG

4XDOLW\ $OWHUDWLRQ

,W LV DOVR SRVVLEOH WR JHQHUDWH D QHZ FKRUG E\ DOWHULQJ WKH TXDOLWLHV WKDW DUH
DOUHDG\ LQ LW 1RWHV FDQ EH UDLVHG RU ORZHUHG JHQHUDOO\ E\ D KDOI VWHS $ FKRUG FDQ EHFRPH D E\ UDLVLQJ WKH RU D PLQ FDQ EHFRPH D PLQ E E\ORZHULQJ WKH

)DPLO\ $OWHUDWLRQ

7KH ODVW ZD\ WR FKDQJH D FKRUG ZLWKRXW FKDQJLQJ LWV URRW LV WR DOWHU LWV IDPLO\ ,Q JHQHUDO DV VWDWHG EHIRUH WKHUH DUH WKUHH IDPLOLHV RI FKRUGV †† PDMRU FKRUGV PLQRU FKRUGV GRPLQDQW FKRUGV

<RX N[QRZ ZKLFK IDPLO\ \RX ºUH GHDOLQJ ZLWK E\ ORRNLQJ DW WKH DQG WKH

- ,W WKH LV D E WKHQ LW LV D PLQRU FKRUG
- ,W WKH LV D PDMRU DQG WKH LV D PDMRU WKHQ LW LV D PDMRU FKRUG
- ,W WKH LV PDMRU DQG WKH LV PLQRU WKHQ LW LV GRPLQDQW
- ,W WKHUH LV QR RU QR WKHQ LW LV JHQHUDOO\ E\ORRNLQJ DW WKH RWKHU QRWHV LQ WKH FKRUG IRU LQVWDQFH D PLQ FKRUG LV PLQRU

:KHQ LW LVQ ºW FOHDU MXVW WKLQN RI WKH VFDOH WKDW LQFOXGHV WKDW FKRUG †† LI LW KDV D ºUVW PDMRU UG DQG D PLQRU WK WKHQ LW ºV D GRPLQDQW FKRUG HWF

$ 0DM FKRUG LV WKH RQO\ WLPH WKLQJV JHW FRQIXVLQJ †† WKLV FDQ EH HLWKHU PDMRU RU GRPLQDQW ZKLFK MXVW PHDQV \RX KDYH PRUH RSWLRQV ZKHQ GHDOLQJ ZLWK WKDW FKRUG 6RPHWKLQJ VLPLODU LV VRPHWLPHV WUXH RI WVDFNHG IRXUWK FKRUGV EXW WKDW LV IRU DQRWKHU GD\

:KHQ ZH DOWHU WKH IDPLO\ RI D FKRUG ZH FKDQJH LW IURP PDMRU WR PLQRU IURP PLQRU WR GRPLQDQW RU LQ DQ\ RWKHU ZD\ WR PRYH EHWZHHQ IDPLOLHV 7KH FKRUG VWD\V WKH VDPH H[FHSW IRU WKH QRWHV WKDW ZRXOG PDNH LW EHORQJ WR D FHUWDLQ IDPLO\

)RU LQVWDQFH D PLQ EHFRPHV D RU D 0DM ,Q WKRVH FDVHV WKH URRW DQG WKH VWD\ WKH VDPH

&KDQJLQJ WKH 5RRW

,QYHUVLRQ

<RX GRQ ¶W DOZD\V ZDQW WKH EDVV QRWH RI \RXU FKRUG WR VWD\ WKH VDPH 6RPHWLPHV RIWHQ WLPHV WKH UHDVRQ \RX ¶UH VXEVWLWXWLQJ LV WR FUHDWH QHZ EDVV PRYHPHQW ,Q WKHVH FDVHV \RX QHHG WR PRYH WKH FKRUG FRPSOHWHO\ 7KH VLPSOHVW ZD\ RI GRLQJ WKLV LV WR LQYHUW LW <RX HQG XS ZLWK DOO RI WKH VDPH QRWHV RQO\ LQ D GLIIHUHQW RUGHU DQG ZLWK D GLIIHUHQW EDVV QRWH 3XW WKH RQ WKH EDVV HQG IRU LQVWDQFH 7KLV ZLOO JLYH \RX DQ HQWLUHO\ QHZ FKRUG WR ZRUN ZLWK)RU H[DPSOH D &0DM FDQ EHFRPH D (P E

,W LV ZRUWK SDXVLQJ KHUH IRU D PRPHQW %HWZHHQ TXDOLW\ DGGLWLRQ DQG VXEWUDFWLRQ TXDOLW\ DOWHUDWLRQ IDPLO\ DOWHUDWLRQ DQG LQYHUVLRQ WKHUH LV D YDVW DUUD\ RI SRVVLELOLWLHV ,I\RX FRPELQH WKHVH WHFKQLTXHV \RX FDQ JHQHUDWH DOPRVW OLPLWOHVV QHZ FKRUGV WR ZRUN ZLWK $QG WKLV LV DOPRVW DOZD\V JRLQJ WR VRXQG JRRG

7KH JHQHUDO UXOH ZKHQ ZRUNLQJ ZLWK FKRUG VXEVWLWXWLRQV DW OHDVW WKH WUDGLWLRQDO UXOH LV WR PDNH VXUH WKDW WKH QHZ FKRUG KDV DW OHDVW QRWHV WKDW WKH ROG FKRUG KDG ,I\RX GR WKDW \RX FDQ ¶W UHDOO\ JR ZURQJ (YHQ LI\RX GRQ ¶W GR WKDW WKHUH DUH SOHQW\ RI FDVHV ZKHUH ZKDW\RX SOD\ ZLOO VRXQG JRRG

,W LVQ ¶W DOWRJHWKHU XQFRPPRQ IRU SODYHUV WR DGG DQG DOWHU PXOWLSOH TXDOLWLHV
LQYHUW WKH UHVXOWLQJ FKRUG DQG WKHQ VXEWUDFW VRPH TXDOLWLHV IURP WKDW FKRUG
HQGLQJ XS ZLWK D VXE FKRUG WKDW LV FRPSOHWHO\ GLIIHUHQW WKDQ WKH RULJLQDO KDYLQJ RQO\ RU VRPHWLPHV QR QRWHV LQ FRPPRQ ZLWK LW ¶RLQJ WKLV FDQ VWLOO VRXQG JUHDW LW MXVW PHDQV\RX KDYH WR OLVWHQ FDUHIXOO\ DQG NQRZ ZKHQ WR UHHO LW LQ DQG
FRPH EDFN WR WKH RULJLQDO SURJUHVVLRQ $V DOZD\V ZLWK WKHRU\ \RX KDYH WR OHDUQ WR XVH\RXU HDUV DV D JXLGH

6ODVK &KRUGV

6LPLODU LQ QRWDWLRQ WR LQYHUVLRQV VODVK FKRUGV DUH D JUHDW WRRO IRU FKRUG
VXEVWLWXWLRQ :KHUHDV WKH LQYHUVLRQV DUH ZULWWHQ OLNH WKLV ++ $P & ++ GHQRWLQJ

LQWKLVFDVH &DVWKHEDVVQRWH VODVKFKRUGVDUHZULWWHQOLNHWKLV †† $P &P †† GHQRWLQJLQWKLVFDVHWKDWDQ$P FKRUGLVEHLQJFRPELQHGZLWKD &PFKRUGVR WKDWWKH&PFKRUGLVRQWKH ΔERWWRP ÷

7KLV ZD\ RI FRPELQLQJ FKRUGV LV LPSRUWDQW IRU SRO\WRQDOLW\ DQG ZLOO EH
GLVFXVVHGDJDLQODWHU)RUQRZZHFDQUHVWDWVDLQJWKDWLWLVSRVVLEOHWRDGGD FKRUGWRDSUHH[LVWLQJFKRUGDQGHQGXSZLWKDFKRUGVXEVWLWXWLRQWKDWLVD VODVKFKRUG

FKRUG 7KLV LV D ZD\ RI DOWHULQJ D FKRUG ZLWKRXW DGGLQJ VXEWUDFWLQJ RU FKDQJLQJ DQ\ RI LWV TXDOLWLHV DOWKRXJK LW FDQ EH FRPELQHG ZLWK DQ\ RI WKRVH WHFKQLTXHV

7UDQVSRVLWLRQ

$ VSHFLDO NLQG RI VXEVWLWXWLRQ LV WKH WUDQVSRVLWLRQ ,Q WKLV FDVH D GRPLQDQW
FKRUG LV UHSODFHG E\ DQRWKHU GRPLQDQW FKRUG DW WUDQVSRVLWLRQ DZD\ )RU H[DPSOH D &
EHFRPHV DQ)

&KRUG 3URJUHVVLRQ 6XEVWLWXWLRQV

&KRUG $GGLWLRQ

5DWKHU WKDQ DOWHU RU DGG WR DQ H[LVWLQJ FKRUG LW LV SRVVLEOH WR VLPSO\ DGG
FKRUGV
WR D SURJUHVVLRQ WR DFKLHYH D UHVXOW VLPLODU WR VWUDLJKW IRUZDUG VXEVWLWXWLRQ
7KLV
LV VWLOO D IRUP RI VXEVWLWXWLRQ RQO\ LW LV D SURJUHVVLRQ VXEVWLWXWLRQ UDWKHU
WKDQ D
FKRUG E\ FKRUG VXEVWLWXWLRQ

7KH FKRUG RU FKRUGV WKDW DUH FKRVHQ WR EH DGGHG DUH JHQHUDOO\ RQHV WKDW
KHOS
EULGJH EHWZHHQ RQH FKRUG DQG DQRWKHU EXW LW LV SRVVLEOH WR DGG FKRUGV WKDW
VHUYH
WKHLU RZQ GLVWLQFW KDUPRQLF SXUSRVHV DQG HYHQ WHPSRUDULO\ FKDQJH WKH NH\
FHQWHU RI WKH VRQJ

$Q H[DPSOH RI D VLPSOH FKRUG DGGLWLRQ LV DV IROORZV JLYHQ D LY 9 , LQ *PDMRU
\RX FDQ VLPSO\ DGG D LL FKRUG DW WKH EHJLQQLQJ OHDGLQJ LQWR WKH LY FKRUG ZLWK
DQRWKHU VXEGRPLQDQW FKRUG 2U DOWHUQDWLYHO\ \RX FRXOG DGG D WRQLF FKRUG DW
WKH
EHJLQQLQJ †† IRU LQVWDQFH D YL FKRUG <RX FRXOG DOVR FKRRVH WR DGG D WULWRQH VXE
EHWZHHQ WKH 9 DQG WKH , HQGLQJ XS ZLWK VRPHWKLQJ OLNH WKLV YL LY 9 E,, ,
SODLQJ WKH ILUVW IRXU FKRUGV WZLFH DV TXLFNO\ DV RULJLQDOO\ ZULWWHQ WR EH VXUH WR
WDNH XS WKH VDPH DPRXQW RI WLPH

&KRUG 6XEWUDFWLRQ

7KH RSSRVLWH RI FKRUG DGGLWLRQ EXW FRXVLQ WR LW LQ SULQFLSOH LV FKRUG VXEWUDFWLRQ
:LWK VXEWUDFWLRQ ZH DJDLQ UHSODFH RQH SURJUHVVLRQ RU VHFWLRQ RI D SURJUHVVLRQ ZLWK D QHZ RQH :H FDQ LI ZH FKRRVH NHHS WKH FKRUGV XQDOWHUHG VR WKDW WKH RQO\ FKDQJH ZH DUH PDNLQJ LV WKDW ZH DUH HOLPLQDWLQJ FHUWDLQ FKRUGV IURP WKH SURJUHVVLRQ

7KLV LV XVXDOO\ GRQH VR WKDW ZKDW UHPDLQV DUH WKH PRVW LPSRUWDQW FKRUGV
KDUPRQLFDOO\ †† WKH ,DQG L FKRUGV WKH 9 FKRUGV HWF ,W LV SRVVLEOH KRZHYHU WR UHWDLQ RQO\ VXEGRPLQDQW FKRUGV DQG QRQ , WRQLF FKRUGV 7KLV PDNHV WKH
SURJUHVVLRQ IDU OHVV VWDEOH DQG IDU PRUH KDUPRQLFDOO\ DPELJXRXV ZKLFK LV VRPHWLPHV GHVLUDEOH DV LW OHDYHV PRUH WR WKH OLVWHQHU ¹V LPDJLQDWLRQ DQG SURYLGHV
PRUH URRP IRU LQWHUSUHWDWLRQ RQ WKH SDUW RI D VRORLVW

6HULHV 6XEVWLWXWLRQ

$ VSHFLDO FDVH RI SURJUHVVLRQ VXEVWLWXWLRQ LV VHULHV VXEVWLWXWLRQ LQ ZKLFK D VSHFLILF KDUPRQLF VHULHV RU F\FOH LV VXEVWLWXWHG IRU DQRWKHU XVXDOO\ PRUH
FRPPRQ VHULHV)RU LQVWDQFH WKHUH PD\EH D ORQJHU TXLFNHU PRUH FRPSOLFDWHG VHULHV WKDW UHSODFHV D LL 9 ,

$ IDPRXV H[DPSOH RI WKLV LV WKH &ROWUDQH F\FOH ,Q WKH &ROWUDQH F\FOH SLRQHHUHG E\ -RKQ &ROWUDQH RQ KLV ∆*LDQW 6WHSV ÷ DOEXP D LL 9 , LV UHSODFHG E\ D VHULHV WKDW PRYHV TXLFNO\ WKURXJK WKUHH WRQDO FHQWHUV HDFK D PDMRU WKLUG DSDUW)RU LQVWDQFH
D LL 9 , LQ & PDMRU 'P * &0DM LV UHSODFHG ZLWK 'P (E $E0DM % (0DM * &0DM

,Q WKDW SURJUHVVLRQ WKH WRQLF FKRUGV DUH $E0DM (0DM DQG &0DM 7KHVH WKUHH WRQDO FHQWHUV DUH F\FOHG WKURXJK TXLFNO\ LQ WKH VDPH WLPH LW WDNHV QRUPDOO\ WR
PRYH WKURXJK D LL 9 , LQ RQH WRQDO FHQWHU ,QJHQHUDO WKHVH W\SHV RI SURJUHVVLRQ VXEVWLWXWLRQV DUH XVHG WR DGG FRPSOH[LW\ WR D SLHFH DOWKRXJK WKDW LVQ ¹W DOZD\V
WUXH

0RGDO 5HGXFWLRQ

0RGDO UHGXFWLRQ SLRQHHUHG E\ 0LOHV 'DYLV LV D VSHFLDO NLQG RI FKRUG
VXEWUDFWLRQ LQ ZKLFK DOO RI WKH FKRUGV DUH VXEWUDFWHG H[FHSW WKH RQHV QHHGHG WR
GHILQH WKH PRGDO FHQWHUV RI WKH SLHFH $ PRGDO FHQWHU LV GLIIHUHQW IURP D WRQDO

FHQWHU LQ WKDW UDWKHU WKDQ LGHQWLI\LQJ WKH URRW RU WRQLF RI D FKRUG SURJUHVVLRQ LW
LGHQWLILHV WKH KDUPRQLF FHQWHU RI D VFDOH

6R WKH FKRUGV %P '0DM (DQG $0DM DOO VKDUH WKH VDPH PRGDO FHQWHU QRW EHFDXVH $0DM LV WKH WRQLF FKRUG EXW EHFDXVH WKH\ DOO FRQWDLQ QRWHV WKDW DUH
IRXQG LQ WKH $ PDMRU VFDOH ,Q WKLV FDVH WKRVH FKRUGV PLJKW DOO EH HOLPLQDWHG H[FHSW IRU WKH $0DM FKRUG $OWHUQDWLYHO\ LI WKH\ZHUH DOO HOLPLQDWHG H[FHSW IRU WKH %P WKHQ WKH PRGDO FHQWHU ZRXOG EH WKH % PLQRU VFDOH RU SHUKDSV WKH % GRULDQ PRGH ,Q WKLV ZD\ UHGXFLQJ D SURJUHVVLRQ PRGDOO\ FDQ HQFRXUDJH WKH VROLVWV WR SOD\ DQG WKLQN LQ FHUWDLQ ZD\V

,Q D PRGDO UHGXFWLRQ LW LV FRPPRQ IRU DOO RI WKH FKRUGV H[FHSW WKH , DQG 9 FKRUGV DQG VRPHWLPHV MXVW WKH , FKRUGV WR EH HOLPLQDWHG VR WKDW ZKDW LV OHIW LV
VLPSO\ D VNHOHWRQ WKDW FDQ EH ILOOHG LQ E\ D VFDOH 7KH SRLQW KHUH LV QRW WR FUHDWH
KDUPRQLF PRYHPHQW ZLWK D FKRUG SURJUHVVLRQ ZKLFK PRYHV DZD\ IURP DQG EDFN WRZDUG D WRQLF FKRUG EXW WR DOORZ WKH SOD\HUV D PD[LPXP DPRXQW RI IUHHGRP ZLWKLQ D SDUWLFXODU NH\ E\ HVWDEOLVKLQJ D PRGDO FHQWHU WKDW FDQ EH ILOOHG
LQ FKDQJHG DQG VWUHWFKHG LQ D YDULHW\ RI ZD\V

7KLV LV WKH IRXQGDWLRQ RI PRGDO KDUPRQ\ ZKLFK ZLOO EH GLVFXVVHG ODWHU)RU QRZ LW LV LPSRUWDQW WR RQO\ WR NQRZ WKDW E\ UHGXFLQJ D FKRUG SURJUHVVLRQ WR LWV HVVHQWLDO
VNHOHWRQ D QHZ NLQG RI KDUPRQLF IUHHGRP DQG ORRVHQHVV FDQ EH DFKLHYHG 7KLV ZDV WKH ZD\ RI PRGDO MD]] LQ WKH V DQG LW FKDQJHG WKH ZD\ MD]] SOD\HUV WKRXJKW DERXW FKRUGV DQG VRORV IRUHYHU

0RGDO 6XEVWLWXWLRQ

2QFH \RX KDYH HVWDEOLVKHG D SURJUHVVLRQ DV D VHULHV RI PRGDO FHQWHUV UDWKHU WKDQ WRQDO FHQWHUV WKH SRVVLELOLWLHV IRU FKRUG VXEVWLWXWLRQ RSHQ XS GUDPDWLFDOO\ 0RGDO
VXEVWLWXWLRQ LV D ZD\ RI VXEVWLWXWLQJ RQH FKRUG IRU DQRWKHU ZKHQ ERWK RI WKRVH
FKRUGV DUH FRQWDLQHG LQ WKH VDPH VFDOH RU PRGH

7KHUH ZLOO EH PRUH WR VD\ DERXW WKLV ODWHU LQ WKH FKDSWHU RQ PRGDO KDUPRQ\ EXW MXVW QRZ LW LV HDV\ WR VHH KRZ WKLV ZRUNV LQ SULQFLSOH ++ RQH FKRUG IRU H[DPSOH D &P LV XQGHUVWRRG UHODWLYH WR VRPH PRGDO FHQWHU IRU LQVWDQFH '3KU\JLDQ DQG

VR DQ\ FKRUG FRQWDLQHG LQ ' 3KUJLDQ LV DOORZDEOH DV D VXEVWLWXWLRQ FKRUG IRU &P (DFK WLPH WKLV KDSSHQV LW LV DVVWKRXJK D PRGDO FHQWHU LV EHLQJ ΔFXW ÷ DQG LQYHUWHG †† VRPH QRWHV RI WKH VFDOH DUH EHLQJ HOLPLQDWHG DQG ZKDW LV OHIW LV
UHDUUDQJHG LQWR VRPH QHZ FKRUG

7KH SRVVLELOLWLHV IRU UHKDUPRQL]DWLRQ KHUH DUH QHDUO\ HQGOHVV SDUWLFXODUO\ ZKHQ
\RX VWDUW WR FRQVLGHU WKH GLIIHUHQW ZD\V D VLQJOH SURJUHVVLRQ FDQ EH KDUPRQL]HG PRGDOO\ IRU LQVWDQFH WKDW VDPH &P FKRUG FDQ EH VHHQ DV SDUW RI & 3KU\JLDQ RU %$HROLDQ UDWKHU WKDQ '3KU\JLDQ

0RGDO ,QWHUFKDQJH

)LQDOO\ WKHUH LV PRGDO LQWHUFKDQJH 7KLV LV QRW VR PXFK D WHFKQLTXH IRU FKRUG VXEVWLWXWLRQ DV LW LV IRU PRGDO FHQWHU VXEVWLWXWLRQ EXW WKH UHVXOW LV VWLOO WKDW RQH
FKRUG RU VHW RI FKRUGV LV UHSODFHG E\ DQRWKHU :KDW ZH PHDQ E\ PRGDO FHQWHU VXEVWLWXWLRQ LV WKDW UDWKHU WKDQ XVLQJ D QHZ FKRUG WKDW VKDUHV WKH VDPH PRGDO
FHQWHU DV WKH ROG RQH ZH UHSODFH WKH PRGDO FHQWHU FRPSOHWHO\ HYHQ VRPHWLPHV LQ D ZD\ WKDW PDNHV WKH PXVLF DOWRJHWKHU GLVRQDQW DQG WKHQ JHQHUDWH D FKRUG
EDVHG RQ WKDW QHZ PRGDO FHQWHU

:H ZLOO FRYHU WKLV DJDLQ VRRQ EXW IRU QRZ \RX FDQ VHH WKH ZD\ WKDW GRLQJ WKLV RSHQV XS WKH KDUPRQ\ RI D VRQJ FRPSOHWHO\ WR LWV OLPLW 7KHUH LV YLUWXDOO\ QRZKHUH \RX FDQQRW JR ZLWK ,QWHUFKDQJH DQG PRGDO VXEVWLWXWLRQ ZKHQ WKH\ DUH FRPELQHG

3RO\WRQDO 6XEVWLWXWLRQV

$ SRO\WRQDO VXEVWLWXWLRQ RFFXUV ZKHQ D FKRUG RU SDUW RI D FKRUG IURP VRPH RWKHU NH\ FHQWHU LV XVHG LQ D SURJUHVVLRQ 7KLV LV RIWHQ GRQH E\ ZD\ RI VODVK FKRUGV)RU LQVWDQFH D & EHFRPHV D & '0DM

$:RUG RQ &KURPDWLFLVP

&KURPDWLFLVP LV DQ LPSRUWDQW FRQFHSW LQ PRGHUQ FRPSRVLWLRQ DQG
LPSURYLVDWLRQ ,W LV HVVHQWLDO WR XQGHUVWDQGLQJ ERWK MD]] DQG FODVVLFDO PXVLF VLQFH
WKH \VHFRQG KDOI RI WKH &HQWXU\ 7KHUH DUH PDQ\ DSSOLFDWLRQV RI FKURPDWLFLVP DQG ZH ZLOO VSHDN RI LW DJDLQ ZKHQ ZH WDON DERXW LPSURYLVLQJ

RYHU D FKRUG SURJUHVVLRQ EXW KHUH †† ZLWK UHVSHFW WR FKRUG VXEVWLWXWLRQV †† LW
SODLV D UROH DV ZHOO

&KURPDWLFLVP VLPSO\ DQG JHQHUDOO\ LV WKH LQWURGXFWLRQ RI WKH WRQH VFDOH LQWR

WKH KDUPRQ\ RI D VRQJ FKRUG VFDOH HWF ,Q JHQHUDO WKLV PHDQV DOWHULQJ QRWHV VFDOHV RU FKRUGV E\ D KDOI VWHS XS RU GRZQ

- ,Q WKH FDVH RI FKRUG VXEVWLWXWLRQ WKLV FDQ WDNH WKH IRUP RI TXDOLW\ DOWHUDWLRQ LQ ZKLFK
- RQH RU PRUH RI WKH TXDOLWLHV RI D GLDWRQLF FKRUG DUH DOWHUHG FKURPDWLFDOO\
- ,Q WKH FDVH RI FKRUG DGGLWLRQ LW FDQ WDNH WKH FDVH RI DGGLQJ D FKRUG D KDOI VWHS DERYH RU EHORZ DQ H[LVWLQJ FKRUG
- ,Q WKH FDVH RI PRGDO VXEVWLWXWLRQV \RX FDQ VRPHWLPHV PRYH DQ HQWLUH FKRUG
  FRQWDLQHG LQ WKH VFDOH EHLQJ XVHG XS RU GRZQ FKURPDWLFDOO\ 7KLV LV D YHUVLRQ RI ZKDW LV FDOOHG ΔVOLGLQJ ÷ ZKLFK ZLOO EH GLVFXVVHG ODWHU

7HFKQLTXHV VXFK DV PRGDO LQWHUFKDQJH DQG FKURPDWLFLVP DUH ZD\V RI JUHDWO\ H[WHQGLQJ WKH KDUPRQLF UDQJH RI D VRQJ %HWZHHQ WKHVH WHFKQLTXHV OLHV YLUWXDOO\ HYHU\FKRLFH \RX FRXOG HYHU PDNH ZLWK WKH KDUPRQ\ RI D SLHFH :KDW LV OHIW LV WR XQGHUVWDQG WKH ZD\ WKDW ZLGH RSHQ FKRUG VXEVWLWXWLRQV FDQ EH XVHG LQ WKH FRQWH[W RI LPSURYLVDWLRQ †† KRZ FDQ ZH SOD\ ZLWK DQG RYHU WKH FKRUGV RI D VRQJ XVLQJ WKHVH KDUPRQLF WHFKQLTXHV''

0RUH 6XEVWLWXWLRQ ([DPSOHV

,W LV ZRUWK SDXVLQJ RYHU DOO WKHVH VXEVWLWXWLRQV IRU D PRPHQW DQG JLYLQJ VRPH H[DPSOHV 7KLV FDQ EH D GLIILFXOW FRQFHSW WR PDVWHU EXW LW LV TXLWH LPSRUWDQW DQG H[DPSOHV ZLOO KHOS \RX VHH KRZ FKRUGV DQG HYHQ SURJUHVVLRQV DUH VXEVWLWXWHG LQ SUDFWLFH UDWKHU WKDQ VLPSO\ LQ WKHRU\

(DFK RI WKH IROORZLQJ H[DPSOHV WDNHV WKLV SURJUHVVLRQ DV LWV VWDUWLQJ SRLQW $P ' *0DM &0DM) P E % (P

4XDOLW\ $GGLWLRQ DQG $OWHUDWLRQ

7KH ILUVW NLQG RI VXEVWLWXWLRQ †† TXDOLW\ DGGLWLRQ †† LV VLPSOH HQRXJK +HUH ZH WDNH D FKRUG RU WZR RU PRUH IURP WKH SURJUHVVLRQ DQG DGG TXDOLWLHV WR WKHP $P EHFRPHV $P IRU LQVWDQFH *0DM EHFRPHV SHUKDSV *0DM

7R DOWHU WKH IDPLOLHV RI VRPH RI WKH FKRUGV VLPSO\ FKDQJH WKH UHOHYDQW TXDOLWLHV &0DM EHFRPHV & % EHFRPHV %P $QG VR RQ

,QYHUVLRQV

<RX PD\ ZDQW WR FKDQJH WKH EDV PRYHPHQW RI WKH SURJUHVVLRQ E\ DOWHULQJ WKH EDV QRWHV RI RQH RU PRUH FKRUGV WKURXJK LQYHUVLRQ 7KLV LV QRW DV GLIILFXOW DV LW VHHPV LQ SUDFWLFH ,W LV MXVW D PDWWHU RI WDNLQJ RQH RI WKH QRWHV LQ WKH FKRUG WKDW
LVQ 'W WKH URRW DQG SXWWLQJ LW LQ WKH EDV

%HJLQQLQJ ZKHUH ZH OHIW RII LQ WKH ODVW H[DPSOH $P EHFRPHV $P & ZKLFK LV &0DM DGG RU LI \RX OLNH &0DM SLFNLQJ XS D DQG

7UDQVFULSWLRQ

7R SHUIRUP D WUDQVFULSWLRQ VXEWUDFW RQH VHPLWRQH ZLWK WKH VDPH FKRUG ZLWK WKH VDPH FKRUG DW WULWRQH DERYH RU EHORZ LW % EHFRPHV)

0RGDO 6XEVWLWXWLRQ

0RGDO VXEVWLWXWLRQ FDQ EH D OLWWOH WULFN\ WR ILJXUH RXW EXW RQFH \RX GR LW LV DV
VLPSOH DV WKH UHVW)LUVW \RX SLFN D VFDOH †† LQ WKLV FDVH ZH ZLOO DVVXPH $ 'RULDQ 7KHQ \RX GHULYH D FKRUG IURP WKDW VFDOH †† ZH PLJKW SLFN ' VXV †† DQG UHSODFH VRPH FKRUG LQ WKH SURJUHVVLRQ ZLWK WKDW RQH $ QDWXUDO FKRLFH PLJKW EH ' EXW LW FDQ EH DQ\ RI WKHP IRU LQVWDQFH WKH)

3RO\WRQDO 6XEVWLWXWLRQ

:LWK SRO\WRQDO VXEVWLWXWLRQ ZH EHJLQ ZLWK WKH NH\ RI WKH VRQJ DQG WKHQ DQRWKHU NH\ WDNLQJ VRPH RI WKH QRWHV RI WKDW QHZ NH\ DQG DGGLQJ WKHP WR WKH SURJUHVVLRQ

7DNLQJ (0LQRU DV WKH NH\ ZH FDQ DGG DQRWKHU NH\ 0 * ††LQRU †† DQG DGG QRWHV IURP WKDW NH\ WR WKH FKRUGV $P EHFRPHV SHUKDSV $PE RU PD\EH HYHQ &P $P D SRO\FKRUG

&KURPDWLF VXEVWLWXWLRQ

7R VXEVWLWXWH XVLQJ DOO WRQHV MXVW WDNH VRPH QRWHV IURP RXWVLGH RI WKH VFDOH DQG DGG WKHP WR WKH SURJUHVVLRQ

*0DM EHFRPHV *P E VWLOO FRQWDLQLQJ LQ WKLV FDVH WKH % DQG ' IURP WKH RULJLQDO FKRUG EXW DGGLQJ * DQG $

6HULHV 6XEVWLWXWLRQ

7R VXEVWLWXWH ZLWK D VHULHV UHSODFH SHUKDSV WKH ILUVW LL 9 , ZLWK VRPH RWKHU VHULHV PD\EH ,9 9 , LLL YL LL 9 , WKH &ROWUDQH F\FOH RU VRPH OHVV FRPPRQ VHULHV VXFK DV LLLP ,9 E ELL ,0DM

,PSURYLVLQJ 2YHU &KRUG 3URJUHVVLRQV

2QFH \RX XQGHUVWDQG KRZ WR DSSO\ KDUPRQLF WKHRU\ WR H[WHQG DQG PDQLSXODWH WKH KDUPRQ\ WKH FKRUG VWUXFWXUH RI D SLHFH WKH QH[W VWHS LV WR OHDUQ WR XVH WKRVH
KDUPRQLF PDQLSXODWLRQV WR JHQHUDWH PHORG\ OLQHV LQ DQG RYHU WKDW SLHFH 7KLV FDQ EH GRQH HLWKHU FRPSRVLWLRQDOO\ EXW WKH ZD\ZH DUH LQWURGXFLQJ LW KHUH LV WKH ZD\ WKDW MD]] LPSURYLVHUV WKLQN DERXW WKH LVVXH :H ZLOO GLVFXVV LW KHUH LQ WHUPV RI LPSURYLVDWLRQ EXW NQRZ WKDW LW LV SRVVLEOH WR DSSO\ DOO RI WKH VDPH SULQFLSOHV WR FRPSRVLWLRQ

&KRUG 7RQHV

7KH IRXQGDWLRQ RI WUDGLWLRQDO MD]] LPSURYLVDWLRQ WKLQN EHERS LV FKRUG WRQHV &KRUG WRQHV DUH VLPSO\ WKH QRWHV RI D FKRUG (DFK GHJUHH RI D VFDOH KDV D FKRUG DWWDFKHG WR LW DQG HDFK FKRUG KDV IRXU FKRUG WRQHV WKH IRXU QRWHV WKDW FKRUG 7KHVH QRWHV ZKLFK ZLOO FKDQJH GHSHQGLQJ RQ WKH FKRUG \RX DUH SODLQJ RYHU DUH WKH EDVLV IRU WKH PHORGLHV WKDW \RX FUHDWH RYHU WKDW FKRUG ,Q WKH
EDVHOLQH RI D FKRUG RU DQ\RWKHU FKRUG WKDW GRHVQ¶W FRQWDLQ D FKRUG WKH WRQHV DUH VLPSO\ WKH QRWHV RI WKDW FKRUG

&KRUG WRQHV DUH XVHG WR FUHDWH LPSURYLVHG RU FRPSRVHG PHORGLHV RYHU D VHW RI FKRUG FKDQJHV ,Q SUHPRGDO MD]] LQ SDUWLFXODU WKH OLQHV WKDW DUH SODHG LQ D VRQJ DUH WLHG GLUHFWO\ WR WKH PRYHPHQW RI LWV FKRUGV †† IRU HDFK QHZ FKRUG WKHUH LV D QHZ VHW RI FKRUG WRQHV DQG WKRVH DUH WKH QRWHV WKDW DUH XVHG WR FUHDWH PHORGLHV
7KLV LV DNLQ WR DUSHJJLDWLQJ WKH FKRUGV RI D VRQJ DV WKH\ SDVV LQ GLIIHUHQW ZD\V WR FUHDWH QRYHO PHORGLHV

-RH 3DVV ZDV NQRZQ WR KDYH VDLG ΔZKHQ WKH FKRUG FKDQJHV \RX FKDQJH ǫ DQG WKDW KDV DOZD\V EHHQ WKH UXOH RI D FHUWDLQ NLQG RI MD]] LPSURYLVDWLRQ DQG FRPSRVLWLRQ DV ZHOO DV D WHFKQLTXH XVHG E\ FODVVLFDO FRPSRVHUV URFN SOD\HUV FRXQWU\ SOD\HUV DQG YLUWXDOO\ DOO PRGHUQ ZHVWHUQ PXVLFLDQV

$USHJJLDWLQJ WKH FKRUGV LQ D SURJUHVVLRQ LV WKH IRXQGDWLRQ RI PHORG\ DV ZH QRZ NQRZ LW LQ WKH ZHVW DQG LW LV UHVSRQVLEOH IRU HYHU\WKLQJ IURP WKH PRVW FRPSOH[WRQDO MD]] DUUDQJHPHQWV WR WKH VLPSOHVW FDWFKLHVW SRS VRQJV

3OD\LQJ WKH FKRUG WRQHV RI WK FKRUGV LV WKH ZD\ WKDW MD]] SOD\HUV XQGHUVWDQG WKH URRW RI WRQDO LPSURYLVDWLRQ ,W LV QRW WKH RQO\ WHFKQLTXH WKH\ XVH QRW DW OHDVW DOO

E\ WHOI DQG FHUWDLQO\ QRW LQ PRGHUQ MD]] DIWHU 0LOHV 'DYLV EXW LW DFFRXQWV IRU WKH EDVLF XQGHUVWDQGLQJ RI VLQJOH QRWH KDUPRQ\ LQ MD]]

([WHQVLRQV

<RX PD\ EH WKLQNLQJ WKDW FKRUG WRQH EDVHG PHORGLHV VHHP WRR HDV\ DQG VLPSOH HYHQ WR WKH SRLQW RI EHLQJ UHGXFWLYH <RX PD\ KHDU ZKDW IRU LQVWDQFH &KDUOLH 3DUNHU GLG DQG NQRZ WKDW KH ZDVQ¶W MXVW IRFXVLQJ DOO RI KLV HQHUJ\ RQ IRXU WRQHV IRU HDFK FKRUG 7KLV LV RI FRXUVH WUXH 7KHUH DUH PDQ\ ZD\V JUHDW SOD\HUV DFKLHYH FRORU DQG YDULDWLRQ HYHQ LI WKH\ DUH XVLQJ WKH WUDGLWLRQDO PHWKRG RI LPSURYLVDWLRQ WKDW WHOOV WKHP WR IRFXV RQ FKRUG WRQHV 2QH RI WKHP LV FKRUG VXEVWLWXWLRQV ZKLFK ZH ZLOO GLVFXVV DJDLQ QH[W $QRWKHU LV FKURPDWLFLVP ZKLFK ZLOO EH GLVFXVVHG ODWHU LQ WKLV FKDSWHU

%XW PD\EH WKH VLPSOHVW WKLQJ LPSURYLVHUV FDQ GR LV SOD\ WKH H[WHQVLRQV RI ZKDWHYHU FKRUG WKH\ DUH SOD\LQJ RYHU :KHQ \RX ¶UH DVVHPEOLQJ D FKRUG DQ H[WHQVLRQ LV DV\RX OLNHO\ NQRZ DQ\RI WKH QRWHV EH\RQG WKH WKDW\RX JHW WR E\ DVFHQGLQJ VRPH VFDOH LQ UGV ,Q RWKHU ZRUGV WKH\ DUH WKH WKH WKH DQG WKHILU DOWHUDWLRQV

%\ SOD\LQJ DQ H[WHQVLRQ \RX DUH SOD\LQJ D QRWH WKDW LVQ¶W D FKRUG WRQH EXW WKDW LV

D WRQH LQ D FKRUG RI WKDW VDPH URRW WKDW FRQWDLQV WKRVH FKRUG WRQHV ,Q RWKHU

ZRUGV \RX DUH SOD\LQJ D QRWH WKDW LV LQ DQ H[WHQGHG FKRUG EDVHG RQ WKH VDPH QRWH WKDW WK FKRUG\RX DUH SOD\LQJ RYHU LV EDVHG RQ 7KHUH DUH PXOWLSOH ZD\V RI GRLQJ WKLV HDFK ZLWK GLIIHUHQW HIIHFWV EXW WKH JHQHUDO LGHD LV WKH VDPH †† E\ RSHQLQJ XS WKH H[WHQVLRQV RI D FKRUG \RX DOORZ \RXUVHOI PRUH PHORGLF IUHHGRP DQG RSHQ WKH GRRU WR VXEWOHU DQG FRPSOH[KDUPRQLF FRORUV ,I \RX KDYH HYHU OLVWHQHG WR %LOO (YDQV KH ZDV D PDVWHU RI WKLV

2QH ZD\ RI SOD\LQJ H[WHQVLRQV LV WR XVH WKHP WR JHW IURP RQH FKRUG WRQH WR DQRWKHU 7KLV LV D PRUH WUDGLWLRQDO ZD\ DQG LW ZDV XVHG LQ MD]] DV HDUO\ DV WKH

ERS \HDUV 7KLV ZD\ RI XVLQJ H[WHQVLRQV WUHDWV WKHP DV WRQHV WR SDVV WKURXJK UDWKHU WKDQ WR ODQG RQ DQG VR LW VWLOO WUHDWV WKH FKRUG WRQHV DV SULPLWLYH 7KH RWKHU

ZD\ RI VHHLQJ DQG SOD\LQJ H[WHQVLRQV LV WR RSHQ WKHP XS IXOO\ DOORZLQJ \RXUVHOI WR EHJLQ DQG HQG SKUDVHV RQ H[WHQVLRQV

7KLV LV D ZD\ RI GRLQJ DZD\ ZLWK WKH ROG PHWKRG RI WUHDWLQJ FKRUG WRQHV DV WKH HVVHQWLDO EXLOGLQJ EORFNV RI DOO PHORG\ DQG LW LV GHFLGHGO\ PRGHUQ KLWWLQJ LWV
VWULGH LQ WKH ODWH V 2SHQLQJ FKRUG WRQHV XS FRPSOHWHO\ ZDV LQ PDQ\ ZD\V DQ LQYHQWLRQ RI -RKQ &ROWUDQH DQG LW OHG KLP LQ VRPH UHVSHFWV WR KLV PRGDO DQG IUHH MD]] SHULRGV

8VLQJ 6XEVWLWXWLRQV LQ 6LQJOH 1RWH /LQHV

&KRUG VXEVWLWXWLRQV VXEV IRU VKRUW DUH D WLPH KRQRUHG ZD\ RI JHQHUDWLQJ
PHORGLF YDULDWLRQ %\ UHKDUPRQL]LQJ D VHW RI FKDQJHV WKH OHDG SOD\HU KDV WKH DELOLW\ WR SOD\ QHZ PHORGLF LGHDV QRW DOORZHG E\ WKH ROG FKRUGV ,I RU LQVWDQFH D &0DM LV VXEVWLWXWHG IRU DQ $P WKHQ D SOD\HU FDQ FKRRVH WR SOD\ WKH FKRUG WRQHV RI WKH QHZ & FKRUG ,Q WKLV FDVH WKLV JLYHV WKHP D % ZKLFK ZDV QRW DYDLODEOH DV D FKRUG WRQH RI WKH $P FKRUG

7KLV LV RQH RI WKH ZD\V WR XVH D FKRUG VXE †† DV D PHDQV RI H[WHQGLQJ WKH FKRUG WRQHV WKDW \RX DUH DOORZHG WR SOD\ $QRWKHU ZD\ RI XVLQJ D FKRUG VXE LQ VLQJOH QRWH SOD\LQJ LV WR DVVLJQ VRPH VFDOH WR WKH QHZ FKRUG DQG WKHQ SOD\ WKDW VFDOH
VHH FKRUG VFDOHV EHORZ)RU LQVWDQFH LI \RX VXEVWLWXWH DQ) IRU D % WKHQ \RX FDQ SOD\ DQ) 0L[R\GLDQ VLQFH WKH QRWHV RI WKH) FKRUG DUH DOO IRXQG LQ WKDW VFDOH

&KRUG VXEVWLWXWLRQV DUH RQH ZD\ RI EUHDNLQJ RXW RI WKH ELQG RI PHUHO\ SOD\LQJ FKRUG WRQHV 7KH\ DUH QRW KRZHYHU WKH RQO\ ZD\ (YHQ LQ VWDQGDUG WRQDO KDUPRQ\ WKHUH DUH RWKHU GHYLFHV IRU DFKLHYLQJ YDULDWLRQ %XW FKRUG VXEV UHPDLQ SHUKDSV WKH PRVW ZLGHO\ XVHG IRUP RI KDUPRQLF YDULDWLRQ 7KH\ DUH VLPSOH LQ QDWXUH WKRXJK QRW DOZD\V LQ FRQFHSW †† E\ UHKDUPRQL]LQJ D SURJUHVVLRQ ZH DFKLHYH ZKDW LV HIIHFWLYHO\ D QHZ SURJUHVVLRQ DOWRJHWKHU ZKLFK WKHQ DOORZV XV WR SOD\ LQ QHZ ZD\V E\ SOD\LQJ RYHU WKH QHZ SURJUHVVLRQ DV WKRXJK LW ZHUH WKH RULJLQDO RQH

7KLV PXVW EH GRQH WDVWHIXOO\ DQG LW LV LPSRUWDQW KHUH WR FKRRVH \RXU VXEV ZHOO VLQFH WKH ZURQJ RQH FDQ VRXQG TXLWH FODQN\ RYHU WKH UK\WKP VHFWLRQ RI \RXU EDQG EXW ZKHQ LW LV GRQH ZHOO LW GRHV DPD]LQJ ZRUN :LWK FKRUGV VXEV \RX FDQ EHJLQ WR VRXQG OLNH D SURIHVVLRQDO LPSURYLVHU VWUDLJKW DZD\ ULJKW RXW RI WKH JDWH

$QRWKHU ORYHO\ IHDWXUH RI VXEVWLWXWLRQV LV WKDW WKH HIIHFW WKH\ KDYH LV KXJHO\
YDULDEOH GHSHQGLQJ RQ ZKDW VXE \RX FKRRVH ,I \RX FKRRVH VRPHWKLQJ YHU\ FORVH

WR WKH RULJLQDO FKRUG RU YHU\ FRQVRQDQW ZLWKLQ WKH NH\ RI WKH VRQJ WKHQ WKH UHVXOWLQJ PHORG\ ZLOO EH YHU\ FRQVRQDQW ,I KRZHYHU \RX FKRRVH D VXE WKDW FUHDWHV PRUH WHQVLRQ RU PXGGLHV XS WKH KDUPRQLF ZDWHUV WKHQ WKDW ZLOO EH \RXU UHVXOW

(YHU\SODFHU GHFLGHV ZKLFK VXEV WR XVH DQG ZKHQ DQG WKDW LV SDUW RI ZKDW PDNHV WKHP VR XVHIXO †† FKRUG VXEV DUH KLJKO\SHUVRQDO DQG EHFRPH D SDUW RI\RXU VW\OH MXVW DV D SDUWLFXODU WRQH RU WHFKQLTXH PLJKW <RX FDQ HYHQ EHJLQ WR VHH
VXEVWLWXWLRQV DV KDUPRQLF WHFKQLTXHV VRPH RI ZKLFK \RX KDYH PDVWHUHG DQG OLNH DOO WHFKQLTXHV KDYH DGGHG WR\RXU EDJ RI WRROV

&KRUG 6FDOHV

:KHQ\RX DUH WU\LQJ WR PRYH EH\RQG FKRUG WRQHV DQG LQWR D YDVWHU PRUH ZLGH RSHQ HYHQ PRUH DPELJXRXV KDUPRQLF VSDFH WKHUH DUH WZR EDVLF ZD\V RI
SURFHHGLQJ

$V ZH KDYH VHHQ \RX FDQ

3OD\H[WHQVLRQV RI WKH FKRUGV LQ WKH SURJUHVVLRQ DOORZLQJ\RX WR PRYH EH\RQG WKH XVXDOO\ IRXU FKRUG WRQHV IRU HDFK FKRUG

<RX FDQ VXEVWLWXWH FKRUGV DOORZLQJ\RX WR RSHQ QHZ FKRUG WRQHV DQG H[WHQVLRQV WKDW ZHUH SUHYLRXVO\XQDYDLODEOH

%RWK RI WKHVH PHWKRGV KRZHYHU HYHQ ZKHQ WKH\ DUH FRPELQHG UHSUHVHQW RQO\ RQH ZD\ RI WKLQNLQJ DERXW PRYLQJ EH\RQG FKRUG WRQHV 7KH\ DUH ERWK FKRUGDO LQ QDWXUH E\ZKLFK,PHDQ WKH\ DUH ERWK WUHDWLQJ WKH FKRUGV RI WKH SURJUHVVLRQ DV LVRODEOH IXQGDPHQWDO LPPXWDEOH XQLWV ZKLFK FDQ EH DOWHUHG H[WHQGHG DQG HYHQ VXEVWLWXWHG IRU EXW ZKLFK DUH VWLOO WKH VROH IRXQGDWLRQV IRU \RXU PHORGLF
LPSURYLVDWLRQ RU FRPSRVLWLRQ

7KLV ZD\ RI WKLQNLQJ DERXW D FKRUG SURJUHVVLRQ LV ROG KXQGUHGV RI\HDUV ROG LQ FODVVLFDO PXVLF DQG DV ROG DV WKH HDUOLHVW EHHPS LQ MD]] DQG LW LV WKHUHIRUH WLPH WHVWHG %XW LW LV OLPLWLQJ $W LWV FRUH LW FRQVLVWV RI WKH LGHD WKDW WR SOD\ RYHU D VHW
RI FKRUGV PHDQV EDVLFDOO\ DUSHJJLDWLQJ WKRVH FKRUGV SOD\LQJ FKRUG WRQHV RU WKHLU VXEVWLWXWLRQV DQG H[WHQVLRQV $QG WKDW LV PRUH RU OHVV WKH IRXQGDWLRQ RI
ZKDW ZH WKLQN RI DV PHORG\ RU DW OHDVW LW KDV EHHQ IRU PRVW RI WKH PRGHUQ HUD

7KHUH LV KRZHYHU DQRWKHU ZD\ RI VHHLQJ WKLQJV 5DWKHU WKDQ WUHDWLQJ D FKRUG DV DQ LPPXWDEOH REMHFW LW LV SRVVLEOH WR VHH WKDW FKRUG DV D PHPEHU RI VRPHWKLQJ ODUJHU ,Q PRGDO PXVLF WKLV PHDQV VHHLQJ LW DV QRWKLQJ EXW D FXWWLQJ RI D ODUJHU VFDOH DQG VR RIWHQ WLPHV WKH FKRUG LQGLFDWHV QRWKLQJ EXW D SDUWLFXODU VFDOH RU
PRGH WR EH SODHG SD\LQJ QR DWWHQWLRQ WR VHPLFLLF FKRUG WRQHV

:H ZLOO KDYH PRUH WR VD\ DERXW SXUH PRGDO KDUPRQ\ ODWHU EXW HYHQ LQ WRQDO KDUPRQ\ FKRUG EDVHG KDUPRQ\ LW LV SRVVLEOH WR PRYH LQ WKLV GLUHFWLRQ ,W LV SRVVLEOH WR VHH D VFDOH DV SDUW RI FKRUG WKDW LV EHLQJ ZULWWHQ GRZQ RU SODHG 7R XVH D VFDOH LQ WKLV ZD\ PHDQV JHWWLQJ SDVW VHHLQJ D FKRUG DV D PDS WKDW\RX KDYH WR IROORZ DQG EHJLQQLQJ WR VHH LW DV DQ LQGLFDWRU RI D ODUJHU KDUPRQLF VWUXFWXUH

(QWHU FKRUG VFDOHV $ FKRUG VFDOH LV D VFDOH WKDW LV PDSSHG WR D FKRUG DQG D FKRUG WKDW LV WKHQ PDSSHG WR D VFDOH 3OD\LQJ D FKRUG VFDOH LV D ZD\ RI SOD\LQJ D FKRUG E\ SOD\LQJ D ODUJHU KDUPRQLF VWUXFWXUH D VFDOH XVXDOO\ FRQVLVWLQJ RI VHYHQ QRWHV DQG WKDW PHDQV WKDW LW H[WHQGV WKH KDUPRQ\ RI WKH FKRUG EXW ZLWKRXW
WKLQNLQJ DERXW DQ H[WHQVLRQ DQG QRW QHFHVVDULO\ WKLQNLQJ DERXW D VXEVWLWXWLRQ

$ FKRUG VFDOH H[WHQGV WKH KDUPRQ\ RI D FKRUG LQ DQ\ QXPEHU RI GLUHFWLRQV E\ ILQGLQJ D VFDOH WKDW LQFOXGHV DOO RI WKH QRWHV RI WKH QRWDWHG FKRUG DQG WKHQ
PDSSLQJ WKDW VFDOH RQWR WKH FKRUG JLYLQJ WKH SOD\HU RU FRPSRVHU DOO RI WKH QRWHV RI WKH VFDOH WR ZRUN ZLWK 7KH FKRUG LV QR ORQJHU WKRXJKW RI LQ LVRODWLRQ EXW LV QRZ SDUW RI VRPHWKLQJ ODUJHU 7KH KDUPRQLF ODQGVFDSH LV IUHHU WKDQ LQ VWULFW FKRUGDO KDUPRQ\ VLQFH WKHUH DUH PRUH QRWHV WR FKRRVH IURP DW DQ\JLYHQ WLPH 7KLV DOORZV IRU PRUH PHORGLF YDULDWLRQ 6LQFH WKHUH DUH PXOWLSOH FKRUG VFDOHV DYDLODEOH IRU PRVW FKRUGV GXH WR WKH IDFW WKDW PRVW FKRUGV FDQ ΔILW ǀ LQWR WKH ‘
QRWHV RI PRUH WKDQ RQH VFDOH WKHUH LV HYHQ PRUH YDULHW\

+HUH‘V KRZ LW ZRUNV

- <RX FRPH WR D FKRUG ǂ DQ)0DM IRU LQVWDQFH 5DWKHU WKDQ VHHLQJ WKH IRXU QRWHV RI WKDW FKRUG) $ & (DV WKH IRXQGDWLRQ IRU \RXU PHORG\ OLQH \RX JR LQ VHDUFK RI D ‘ FKRUG VFDOH
- <RX ILQG D VFDOH RU VFDOHV WKDW FRQWDLQV)0DM (YHQ LI ZH OLPLW RXUVHOYHV WR VFDOHV ZKRVH URRW LV) WKHUH LV PRUH WKDQ RQH RSWLRQ)RU LQVWDQFH),QLDQ FRQWDLQV WKRVH ‘ QRWHV) /GLDQ DOVR FRQWDLQV WKHP 7KH[WK PRGH RI WKH KDUPRQLF PLQRU VFDOH) /GLDQ DOVR FRQWDLQV WKRVH QRWHV
- <RX FDQ DOVR SURGXFH DQ\QXPEHU RI VQWKHWLF VFDOHV E\ WDNLQJ RQH RI WKRVH WKUHH VFDOHV DQG DOWHULQJ WKH VHFRQG IRXUWK RU VL[WK QRWHV RI WKHP <RX DUH OHIW ZLWK PXOWLSOH VFDOHV WR FKRRVH IURP

<RXZLOO GHSHQGLQJRQKRZORQJ\RXKDYHWRVLWRQWKLVRQHFKRUG SRWHQWLDOO\SODV\

PRUH WKDQ RQH RI WKHP $VVXPLQJ WKDW \RX RQO\ KDYH D EHDW RU WZR KRZHYHU \RX ZLOO OLNHO\ FKRRVH RQH RI WKRVH VFDOHV DQG XVH LW WR FUHDWH D PHORG\

%\ GRLQJ WKDW \RX ZLOO KDYH FKRVHQ D FKRUG VFDOH D XQLW IRUPHG E\ WKH PDSSLQJ RI IRU LQVWDQFH DQ) /\GLDQ VFDOH RQWR DQ)0DM FKRUG :KLOH \RX DUH RQ WKH)0DM FKRUG \RX FDQ WKHQ SOD\ DQ\ RI WKH QRWHV RI WKH) /\GLDQ VFDOH ++) * $ % & ' ($QG WKDW ¶V KRZ LW ZRUNV

7KH PDJLF RI FKRUG VFDOHV LV PRVW HYLGHQW LQ WZR FDVHV

:KHQ WKH FKRUGV DUH PRYLQJ TXLFNO\ DQG WKLQNLQJ DERXW FKRUG WRQHV H[WHQVLRQV OHDGLQJ WRQHV DQG VXEVWLWXWLRQV LV PDGH GLIILFXOW RU LPSRVVLEOH ,Q WKHVH FDVHV KDYLQJ PHPRUL]HG DIHZ FKRUG VFDOHV IRU HDFK FRPPRQ FKRUG PDNHV SOD\LQJ WKURXJK WKH FKDQJHV EUHH]\

:KHQ WKH FKRUGV DUH PRYLQJ VORZO\ HQRXJK WKDW LW LV SRVVLEOH WR XVH PRUH WKDQ RQH FKRUG VFDOH RYHU D VLQJOH FKRUG ,Q WKHVH FDVHV D WUHPHQGRXV DPRXQW RI WRQDO YDULDWLRQ FDQ EH DFKLHYHG ZLWKRXW HYHU KDYLQJ WR GR YHU\ PXFK LQ WKH ZD\ RI FDOFXODWLRQ

,Q JHQHUDO FKRUG VFDOHV DUH XVHG RQ D FKRUG E\ FKRUG EDVLV 7KH PRVW WR LV VWLOO ΔZKHQ WKH FKRUG FKDQJHV \RX FKDQJH ÷ DQG WKDW ¶V ZK\ LW LVQ ¶W PRGDO LW ¶V VWLOO D
WRQDO KDUPRQLF WHFKQLTXH ,W¶V MRE LV WR DVVHPEOH WRQHV WRJHWKHU WKDW GHILQH DQG
H[WHQG D WRQDO SRLQW RI JUDYLW\ WKH URRW RI D FKRUG ZKLFK DORQJ ZLWK RWKHU SRLQWV RI JUDYLW\ GHILQHV D WRQDO FHQWHU DQG VR D NH\ MXVW WKH VDPH ZD\ D FKRUG SURJUHVVLRQ GRHV ,Q WKLV ZD\ FKRUG VFDOH SOD\LQJ LV FORVHU WR ERP KDUPRQ\ WKDQ LW LV WR ZKDW FDPH DIWHU LW EXW LW LV D PRGHUQ ZD\ RI WKLQNLQJ DERXW WKDW NLQG RI KDUPRQ\

7KRXJK FKRUG VFDOHV DUH JHQHUDOO\ SODFHG FKRUG E\ FKRUG LW LV SRVVLEOH WR
FRPELQH WKHP ZLWK WHFKQLTXHV VXFK DV PRGDO VXEVWLWXWLRQ DQG PRGDO UHGXFWLRQ ZKLFK UHVXOW LQ D KDUPRQLF VSDFH WKDW LV PRUH DPELJXRXV ,Q JHQHUDO FKRUG VFDOHV SOD\ ZHOO ZLWK VXEVWLWXWLRQV DFURVV WKH ERDUG VR LW LV D JUHDW LGHD WR
VXEVWLWXWH D FKRUG DQG WKHQ ILQG D FKRUG VFDOH WR JR DORQJ ZLWK WKH QHZ FKRUG
:KHQ \RX GR WKLV ZLWK VRPHWKLQJ OLNH PRGDO UHGXFWLRQ \RX FDQ HQG XS ZLWK IHZHU FKRUGV DQG PRUH WLPH WR SOD\ ZLWK WKH VFDOHV \RX DUH PDSSLQJ RQWR WKRVH FKRUGV ZKLFK FDQ EH JLQ WR VRXQG DQG IHHO PRUH OLNH PRGDO PXVLF

&KURPDWLFLVP

:KHQ \RX KDYH PRYHG EH\RQG SXUH FKRUGDO KDUPRQ\ DQG LQWR WKH ZRUOG RI VFDOHV WKHUH LV D VHQVH RI JUHDW IUHHGRP ,W LV DV WKRXJK \RX FDQ RSHQ \RXU OXQJV ZLGH DQG WDNH LQ WKH DLU %XW \RX DUH VWLOO YHU\ PXFK LQVLGH 7KHUH LV D ZKROH ZRUOG RXWVLGH \RXU GRRU WKDW LV DYDLODEOH WR \RX &KURPDWLFLVP LV WKH ZD\ RXW
WKDW GRRU

&KURPDWLFLVP DW LWV PRVW EDVLF LV VLPSO\ WKH XVH RI DQ\ RI WKH QRWHV LQ WKH FKURPDWLF VFDOH ,QJHQHUDO LW UHIHUV WR

- 8VLQJ WKH WRQH FKURPDWLF VFDOH WR DOWHU D FKRUG RU D VFDOH WR DFKLHYH VRPH NLQG RI YDULDWLRQ
- ,W FDQ DOVR PHDQ GLVFDUGLQJ FKRUGV DQG VFDOHV DOWRJHWKHU WR SOD\ DV RXWVLGH DV SRVVLEOH

7KH ILUVW RI WKHVH WZR XVHV LV FRPPRQ LQ WRQDO PXVLF DQG WKH VHFRQG LV FRPPRQ LQ DWRQDO PXVLF 7RQDO FKURPDWLFLVP LV LQ VRPH VHQVH OHVV SXUH IRUP RI
FKURPDWLFLVP WKDQ DWRQDO FKURPDWLFLVP ++ LQ WKH ZD\ WKDW LW LV VWLOO WLHG WR D
FKRUG RU VFDOH WKDW LV PRUH UHVWULFWLYH WKDQ WKH WRQH VFDOH %XW WKDW GRHVQ¶W
PHDQ LW LVQ¶W D SRZHUIXO WRRO

$ UDWKHU FRQVHUYDWLYH ZD\ WR XVH FKURPDWLFLVP LQ WRQDO PXVLF LV WKH ZD\
FKURPDWLFV ZHUH XVHG LQ ERS ,Q WKH KH\GD\ RI EHERS LW ZDV TXLWH FRPPRQ WR XVH D FKURPDWLF UXQ WR JHW IURP RQH SODFH WR DQRWKHU LQ EHWZHHQ DUSHJJLRV RI FKRUGV ,Q D VLPLODU YHLQ D FKURPDWLF DGGLWLRQ FDQ EH XVHG DV D SDVVLQJ RU OHDGLQJ WRQH EHIRUH RU LQ EHWZHHQ QRWHV RI DQ DUSHJJLR RU FKRUG 7KLV DPRXQWV WR DGGLQJ D QRWH DERYH RU EHORZ E\ D KDOI VWHS D QRWH LQ WKH VFDOH RU FKRUG \RX DUH XVLQJ

%RS SOD\HUV DOVR PDGH V\QWKHWLF VFDOHV FRQVLVWLQJ RI PRUH WKDQ QRWHV QRZ FDOOHG EHERS VFDOHV 7KHVH VFDOHV ZHUH GHVLJQHG WR DOORZ WKH SOD\HU WR SOD\ DVFHQGLQJ RU GHVFHQGLQJ DQG HQG XS SOD\LQJ D FKRUG WRQH RQ HYHU\ VWURQJ EHDW ZKLOH SOD\LQJ RWKHU QRWHV VRPHWLPHV FKURPDWLF QRWHV LQ EHWZHHQ WKHP 7KH\ ZRXOG RIWHQ EHJLQ ZLWK D GLDWRQLF VFDOH VXFK DV D PDMRU VFDOH DQG DGG RQH FKURPDWLF QRWH LQ EHWZHHQ WZR RI WKH H[LVWLQJ QRWHV RI WKDW VFDOH VXFK DV EHWZHHQ WKH PDMRU WK DQG PDMRU WK RU EHWZHHQ WKH PDMRU QG DQG PDMRU UG

,W LV SRVVLEOH WR XVH VRPH RI WKHVH EHERS WHFKQLTXHV WR DFKLHYH PRUH ΔRXWVLGH ÷

KDUPRQLF HIIHFWV %HJLQQLQJ ZLWK D FKRUG VXE IRU LQVWDQFH WKDW DOUHDG\ FRQWDLQV

QRQ GLDWRQLF QRWHV DQG WKHQ DOWHULQJ RU DGGLQJ WR WKDW FKRUG RU LWV H[WHQVLRQV
FKURPDWLFDOO\ DOORZV \RX WR HQG XS ZLWK DQ DUSHJJLR WKDW LV IDU IURP LQWXLWLYH EXW WKDW PD\ VWLOO VRXQG JUHDW

,W LV DOVR D FRPPRQ SUDFWLFH WR EHJLQ ZLWK D FRPPRQ FKRUG VFDOH D &,RQLDQ PDSSHG RQWR D &0DM FKRUG IRU LQVWDQFH DQG WKHQ DGG WR DQG DOWHU WKDW FKRUG

VFDOH FKURPDWLFDOO\ SHUKDSV IODWWHQLQJ WKH DQG DGGLQJ D QRWH EHWZHHQ WKH DQG QRWHV RI WKH VFDOH HQGLQJ XS ZLWK D V\QWKHWLF VFDOH WKDW ΔZRUNV ÿ ZLWK &0DM FKRUG EXW VRXQGV TXLWH H[RWLF

,QJHQHUDO IHZ WKLQJV LQ PXVLF DUH PRUH SRZHUIXO WKDQ WKH FKURPDWLF VFDOH ,W LV VR SRZHUIXO WKDW ZH KDYH LQYHQWHG VHYHQ QRWH VFDOHV WR UHVWUDLQ XV DQG UHLJQ LQ
WKH FKURPDWLF VFDOH LQ D ZD\ ,W ZRXOG EH HDV\ HQRXJK WR VD\ Δ SOD\ RQH RI WKHVH QRWHV ÿ DW HYHU\ SRLQW LQ WLPH EXW PRVW RI XV ZRXOG EH HQWLUHO\ORVW E\ WKLV +RZHYHU WKH MXGLFLRXV XVH RI FKURPDWLFLVP WR DOWHU DGG WR DQG HYHQ
WHPSRUDULO\ UHSODFH D FKRUG RU FKRUG VFDOH FDQ EH WKH GLIIHUHQFH EHWZHHQ VWD\LQJ LQGRRUV DQG IHHOLQJ WKH IUHVK EUHH]H

3RO\WRQDOLW\

$ FRQFOXVLRQ ZKLFK ZH FDQ GUDZ VR IDU LV WKDW 7RQDO KDUPRQ\ LWVHOI FDQ EH

- &KRUGDO
- 6FDODU
- &KURPDWLF LQ QDWXUH

+RZHYHU 7RQDO KDUPRQ\ LV OLPLWHG E\ RQH IRXQGDWLRQDO SULQFLSOH WKHUH LV RQH DQG RQO\ RQH WRQDO FHQWHU DW DQ\ JLYHQ WLPH 7KH PXVLF FDQ PRYH DQG PRYH TXLFNO\ IURP FHQWHU RI JUDYLW\ WR FHQWHU RI JUDYLW\ EXW DW DQ\ RQH PRPHQW WKHUH LV RQH SRLQW LQ KDUPRQLF VSDFH WKDW FRPPDQGV \RXU DWWHQWLRQ 7KDW PHDQV WKDW
DQ\ QRWH DQG FKRUG DQ\ VFDOH \RX SOD\ DW WKDW WLPH ZLOO KDYH PRUH RU OHVV RQH VHW RI GHILQLQJ FKDUDFWHULVWLFV UHODWLYH WR ZKDW HYHU WKH WRQDO FHQWHU LV

7KLV LV WKH FDVH ZLWK DOO SXUHO\ WRQDO PXVLF DQG LW KDV EHHQ WKH FDVH ZLWK WKH YDVW
PDMRULW\ RI PXVLF LQ JHQHUDO LQ WKH ZHVW IRU KXQGUHGV RI \HDUV 7KLV LV QRW

QHFHVVDULO\ D EDG WKLQJ %XW LQ WKH ODVW RU VR \HDUV FRPSRVHUV EHJDQ WR
H[SHULPHQW ZLWK ZD\V RI PRYLQJ RXWVLGH RI WKLV RQH NH\DW DWLPH VWUXFWXUH

$QG LPSURYLVHUV SDUWLFXODUO\ LQ MD]] EHJDQ WR GR WKH VDPH WKLQJ DURXQG WKH ODWH V 7KLV UHVXOWV LQ ZKDW LV FDOOHG ΔSRO\WRQDOLW\ ÷ ZKLFK LV D ZD\ RI VD\LQJ WKDW WKHUH LV PRUH WKDQ RQH VRPHWLPHV PDQ\ WRQDO FHQWHUV KDSSHQLQJ DW WKH VDPH WLPH 7KLV LV ZKHQ LW JHWV YHU\ DGYDQFHG

,Q SRO\WRQDO PXVLF D VLQJOH QRWH KDV PRUH WKDQ RQH IXQFWLRQ DW WKH VDPH WLPH $ FKRUG RU VFDOH LV WKHQ D TXLWH FRPSOLFDWHG PDWWHU ,I\RX DUH SOD\LQJ LQ ERWK $ PLQRU DQG & PLQRU WKHQ D & LV ERWK D PLQRU[G] DQG D URRW $Q $P FKRUG LV ERWK D L PLQRU LQ $ PLQRU FKRUG DQG D YL PLQRU FKRUG LQ & PLQRU $Q $ PLQRU VFDOH FRQWDLQV ERWK GLDWRQLFDOO\ FRQVRQDQW WRQHV LQ $ PLQ DQG GLVVRQDQW WRQHV
LQ & PLQ 1DYLJDWLQJ VXFK D VSDFH FDQ EH GLIILFXOW EXW LW FDQ UHVXOW LQ VRPH LQFUHGLEOH VXEWOH DQG EHDXWLIXO PXVLF

,Q RUGHU WR DFKLHYH SRO\WRQDOLW\ VRPHWLPHV D SLHFH RI PXVLF LV ZULWWHQ ZLWK FKRUGV EHLQJ ERUURZHG IURP PRUH WKDQ RQH NH\ %XW LI \RX DUH SOD\LQJ RYHU D VWDQGDUG WRQDO SLHFH RI PXVLF DQG \RX ZDQW WR SOD\ SRO\WRQDOO\ WKHQ WKHUH DUH D
IHZ WK[LQJV \RX FDQ GR

-)LUVW \RX FDQ VXEWOHWXWH VODVK FKRUGV IRU VRPH RU DOO RI WKH RULJLQDO FKRUGV $V \RX GR WKLV EH VXUH WR FKRRVH VRPH WULDGV IURP DQ HQWLUHO\ GLIIHUHQW NH\ :KHQ \RX SOD\ RYHU \RXU VXEV \RX FDQ FKRRVH WR DUSHJJLDWH WKH FKRUG IURP WKH RULJLQDO NH\ WKH FKRUG IURP WKH QHZ NH\ RU WKH HQWLUH VODVK FKRUG
- <RX FDQ DOVR FKRRVH D FKRUG VFDOH WKDW VXLWV HLWKHU RU RI WKRVH FKRUGV RU \RX FDQ PRYH EHWZHHQ FKRUG VFDOHV WKDW VXLW HDFK RI WKHP :KHUH \RX FKRRVH WR SOD\ \RXU HPSKDVLV ZLOO GHWHUPLQH KRZ ΔRXW ÷ WKH PXVLF VRXQGV ,I \RX OHDQ KHDYLO\ RQ WKH RULJLQDO NH\ WKHQ WKH PXVLF ZLOO VRXQG PRUH FRQVRQDQW ,I\RX OHDQ DZD\ IURP LW LW ZLOO VRXQG PRUH GLVVRQDQW
- <RX FDQ DOVR VLPSO\ VHOHFW FKRUG VFDOHV IURP FKRUGV WKDW DUHQ ¶W LQ WKH NH\ \RU VRQJ LV ZULWWHQ LQ 7KLV LV DFKLHYHG E\ VXEELQJ LQ D FKRUG WKDW KDV D URRW WKDW LVQ ¶W FRQWDLQHG LQ WKH NH\ RI WKH VRQJ DQG WKHQ FKRRVLQJ VRPH FKRUG VFDOH RQ WKDW URRW WKDW FRQWDLQV PXOWLSOH QRQ NH\ WRQHV %\ PRYLQJ EHWZHHQ WKLV FKRUG VFDOH DQG D PRUH VWDQGDUG FKRUG VFDOH WKDW LV LQ RU FORVH WR LQ WKH NH\ RI WKH VRQJ RU HYHQ E\ FKRRVLQJ PRUH WKDQ WZR VXFK VFDOHV DQG PRYLQJ EHWZHHQ WKHP DOO \RX DFKLHYH SRO\WRQDOLW\

3RO\WRQDOLW\ LV GLIILFXOW WR XQGHUVWDQG HVSHFLDOO\ LI \RX DUH LPSURYLVLQJ DQG KDYH WR ZUDS \RXU KHDG DURXQG LW TXLFNO\ EXW LW FDQ EH SUDFWLFHG <RX FDQ SUDFWLFH LQMHFWLQJ FKRUGV DQG VFDOHV IURP VRPH VHFRQG RU WKLUG RU IRXUWK NH\ LQWR WKH PHORG\ \RX SOD\ RYHU D FKRUG SURJUHVVLRQ %HJLQ VORZO\ DQG ZLWK VLPSOH
SURJUHVVLRQV WKDW PDLQWDLQ WKHLU NH\ FHQWHU VXFK DV D VORZ YHUVLRQ RI $XWXPQ
/HDYHV (YHQWXDOO\ \RX ZLOO EH XVHG WR WKH ZD\ LW VRXQGV DQG \RX ZLOO EHJLQ WR

DGG VHFRQG DQG PRUH NH\ VFDOHV DQG FKRUGV ZLWKRXW KDYLQJ WR WKLQN DERXW SUHFLVHO\ ZKLFK NH\V \RX DUH ERUURZLQJ IURP $W WKDW SRLQW LW LV D PDWWHU RI KHDULQJ DQG IHHOLQJ WKH PRYHPHQW RI WKH PXVLF DQG NQRZLQJ ZKHQ WR GR LW DQG ZKHQ QRW WR

0RGDO +DUPRQ\ 0LOHV 'HXVV\ 3UH &RPPRQ (UD 0XVLF

0RVW RI WKH PXVLF ZH QRZ OLVWHQ WR DQG KDYH OLVWHQHG WR VLQFH WKH PRGHUQ HUD EHJDQ LQ WKH :HVW KDV RQH WKLQJ LQ FRPPRQ †† WRQDOLW\ 7KLV PXVLF LV WRQDO LQ QDWXUH †† IURP FODVVLFDO WR URPDQWLF IURP URFN WR SRS IURP EOXHV WR MD]] WR FRXQWU\ DQG HYHQ LQFOXGLQJ UDS KLS KRS DQG 5 % :H KDYH VHHQ ZKDW LW PHDQV WR EH WRQDO D SDUWLFXODU WRQH RU VRPHWLPHV VHW RI WRQHV DFWV DV WKH
ZHLJKW\ FHQWHU RI WKH PXVLF $OO RI WKH FKRUGV DQG VFDOHV DQG QRWHV WKDW DUH SODFHG RU ZULWWHQ LQ WKDW SLHFH WDNH WKHLU KDUPRQLF IXQFWLRQ IURP WKDW FHQWHU DQG
DOO RI WKHP FDQ EH VHHQ DV HLWKHU PRYLQJ DZD\ IURP RU PRYLQJ WRZDUG WKDW ZHLJKW

7KLV LV QRW KRZHYHU WKH RQO\ ZD\ IRU KDUPRQ\ WR EH RUJDQL]HG ,Q PRGDO PXVLF WKH FHQWHU RI JUDYLW\ WKDW ZDV D VLQJOH QRWH D WRQDO FHQWHU LV QRZ UHSODFHG ZLWK D
QHWZRUN RI QRWHV †† D PRGH RU VFDOH 7KHUH DUH WKHQ JHQHUDOO\ VHYHQ QRWHV DOO DFWLQJ DV WKH ZHLJKW\ FHQWHU WDNHQ WRJHWKHU RI WKH PXVLF 7KHUH LV D NH\ DQG LQ VRPH UHVSHFWV LW FDQ EH VDLG WR FHQWHU RQ D VFDOH EXW WKHUH LV QR RQH QRWH
DURXQG ZKLFK WKH KDUPRQ\ RI WKH SLHFH FRQJHDOV

7KH QRWHV RI WKH VFDOH XVHG DV WKH KDUPRQLF IRXQGDWLRQ DUH DOO WUHDWHG HTXDOO\ ††
RQH LV QRW VHHQ DV WKH WRQLF ZLWK WKH RWKHUV VHUYLQJ WR EXLOG RU UHOHDVH WHQVLRQ YLV
D YLV WKDW WRQLF 1RZ WKHUH DUH LQ VRPH VHQVH VHYHQ WRQLFV DQG WKH UHODWLRQVKLSV
EHWZHHQ WKHP HPHUJH RXW RI WKH VSHFLILF LQWHUYDOV †† WKH FKRUGV DQG WKH
PHORGLHV †† WKDW WKH FRPSRVHU RU LPSURYLVHU FUHDWHV ZLWKLQ WKDW VFDOH RU RXWVLGH

RILW 7KHVRQJLVVDLGWRKDYHDNH\EXWWKHNH\LVZULWWHQDVVRPHWKLQJOLNH Δ$
'RULDQ ÷ UDWKHUWKDQ Δ$PLQRU ÷ ZLWK ÷$Δ LQWKHPRGDOVHQVHRQO\EHLQJWKHUH
WR
LQGLFDWHWKHVFDOHEHLQJSODHGDQGQRWQHFHVVDULO\WKHWRQDOURRWRIWKHSLHFH

7KLV LV WKH EDVLF LGHD RI PRGDO KDUPRQ\ DQG LW LV DV ROG DV SUH PRGHUQ (XURSHDQ PXVLF SULRU WR WKH %DURTXH SHULRG DQG JRLQJ EDFN DV IDU DV *UHHN PXVLF DQG *UHJRULDQ FKDQWV DQG PXFK RI WKH PXVLF WKDW KDV KLVWRULFDOO\ FRPH RXW RI $VLD DQG $IULFD 0RGDO KDUPRQ\ ZDV UHYLWDOL]HG DW WKH WXUQ RI WKH &HQWXU\ E\ )UHQFK FRPSRVHUV VXFK DV 'HEXVV\ DQG 5DYHO DQG LQ MD']] LW ZDV FKDPSLRQHG LQ WKH PLG WR ODWH V E\ 0LOHV 'DYLV -RKQ &ROWUDQH DQG %LOO (YDQV DPRQJ RWKHUV 6LQFH WKH LQYHQWLRQ RI PRGDO MD]] PRGDO KDUPRQ\ KDV EHHQ D XELTXLWRXV SDUW RI URFN IXVLRQ FRXQWU\ IUHH DQG DYDQWJDUGH PXVLF DQG LW KDV DOZD\V EHHQ D IHDWXUH RI WKH EOXHV)HZ WKLQJV LQ PXVLF DUH DV SRZHUIXO RU DV DGDSWDEOH LV PRGDO KDUPRQ\

0RGDO 6XEVWLWXWLRQV

:H KDYH DOUHDG\ PHQWLRQHG PRGDO VXEVWLWXWLRQV 7KHVH DUH SDUW RI WKH KHDUW RI
PRGDO PXVLF :KHQ WKHUH LV D FKRUG SURJUHVVLRQ WKH WUDGLWLRQDO PHWKRG IRU KDUPRQLF VXEVWLWXWLRQ LV WR DOWHU DGG WR DQG LQYHUW WKH H[LVWLQJ FKRUGV UHVXOWLQJ
LQ QHZ FKRUGV WKDW VKDUH LPSRUWDQW FKRUG WRQHV ZLWK WKH ROG RQHV ,Q WKLV ZD\ ZH
DUH VXUH WR HQG XS ZLWK D VHW RI FKDQJHV WKDW IXQFWLRQV LQ WKH VDPH ZD\ RU LQ PXFK WKH VDPH ZD\ DV WKH ROG RQH ++ IXQFWLRQV WKDW LV WRQDOO\ 7KDW ZD\ RI VXEVWLWXWLQJ FKRUGV LV EDVHG RQ WKH IXQFWLRQ RI D FKRUG ZLWKLQ WRQDO KDUPRQ\ YLV D YLV D WRQDO FHQWHU 7KH LGHD LV WKDW WKH QHZ FKRUG KDV D VLPLODU IXQFWLRQ DV WKH
ROG RQH

7KHUH LV KRZHYHU DQRWKHU ZD\ RI JRLQJ DERXW VXEVWLWXWLQJ D FKRUG ,I UDWKHU WKDQ VHHLQJ HDFK FKRUG DV KDYLQJ D SDUWLFXODU IXQFWLRQ ZLWK UHVSHFW WR D WRQLF
DQG HDFK QRWH RI HDFK FKRUG KDYLQJ D SDUWLFXODU IXQFWLRQ ZLWK UHVSHFW WR D URRW ZH VHH LQVWHDG DOO RI WKH QRWHV DV EHLQJ LQVLGH RU RXWVLGH RI VRPH VFDOH RU VHULHV
RI VFDOHV WKHQ WKH JDPH LV GLIIHUHQW :H FDQ QRZ VLQFH WKH FKRUGV DUH VLPSO\ FXWWLQJV RI D ODUJHU VFDOH RU PRGH UHSODFH WKDW FKRUG ZLWK DQ\RWKHU FKRUG WKDW LV
DOVR D FXWWLQJ IURP WKDW VDPH VFDOH RU PRGH ,I ZH VHH DQ $P FKRUG DQG ZH DVVXPH IRU WKH WLPH EHLQJ WKDW LW LV SDUW RI D *'RULDQ VFDOH RU $ 3KUJLDQ WKHQ ZH FDQ UHSODFH LW ZLWK DQ\ FKRUG DOVR FRQWDLQHG LQ WKDW *'RULDQ VFDOH VXFK DV IRU LQVWDQFH D *P VXV FKRUG

7KH DUWLVWU\ RI WKLV VRUW RI VXEVWLWXWLRQ LV LQ WZR WKLQJV

7KH FKRLFH RI PRGDO FHQWHU WKH VFDOH EHLQJ XVHG $W DQ\ JLYHQ WLPH WKHUH DUH PXOWLSOH VFDOHV VWKDW LQFOXGH WKH FKRUG ZULWWHQ GRZQ HLWKHU LQ LVRODWLRQ RU LQFOXGLQJ

WKH FKRUGV DURXQG LW LQ WKH SURJUHVVLRQ DQG VR GHFLGLQJ ZKLFK VFDOHV WR XVH DW WKDW SRLQW LQ WKH SURJUHVVLRQ LV D PDWWHU RI WDVWH

7KH FKRLFH RI FKRUG WR EH XVHG ZLWKLQ WKDW VFDOH , FKRVH LQ WKH H[DPSOH DERYH D *P VXV FKRUG EXW , FRXOG KDYH MXVW DV HDVLO\ FKRVHQ DQ)0DM FKRUG RU DQ\RQH RI D QXPEHU RI RWKHU FKRUGV 'HFLGLQJ ZKLFK RQH WR XVH LV D PDWWHU RI RYHUDOO KDUPRQLF FRORU DQG LV RIWHQ GRQH E\ OLVWHQLQJ WR WKH PHORGLF FRQWHQW RI WKH PXVLF DV RQH FKRUG PRYHV WR WKH QH[W RQH

0RGDO ,QWHUFKDQJH

0RGDO VXEVWLWXWLRQ LV WKH ZD\ WKDW D PRGDO SODYHU RU FRPSRVHU RSHQV WKH
KDUPRQ\ RI D VRQJ WR DOORZ IRU PD[LPXP KDUPRQLF IUHHGRP DQG PHORGLF YDULDWLRQ 3OD\LQJ VLQJOH QRWH OLQHV RYHU PRGDO FKRUGV LV DV HDV\ DV SOD\LQJ DQ\ RI WKH QRWHV LQ WKH VFDOH \RX KDYH FKRVHQ DW WKDW WLPH DQG DJDLQ LQYROYHV D FHUWDLQ DPRXQW RI DUWLVWU\ LQ PDNLQJ MXGLFLRXV GHFLVLRQV DERXW ZKLFK QRWHV WR
VHOHFW 0 ††LOHV 'DYLV ZDV WKH PDVWHU RI WKLV %XW VRPHWLPHV D SOD\HU RU FRPSRVHU ZDQWV VHYHQ PRUH IOH[LELOLW\ (QWHU PRGDO LQWHUFKDQJH

0RGDO LQWHUFKDQJH LV D NLQG RI VXEVWLWXWLRQ ZKHUHE\ WKH VFDOH EHLQJ XVHG LV VZDSSHG RXW IRU DQRWKHU VFDOH †† DQ\ RWKHU VFDOH †† RI WKH VDPH URRW $QG VLQFH HYHU\ VHYHQ QRWH VFDOH KDV VHYHQ PRGHV HDFK ZLWK WKHLU RZQ URRWV WKHUH DUH WKHRUHWLFDOO\ VHYHQ GLIIHUHQW QRWHV IRU HDFK VFDOH WKDW FDQ EH XVHG WR DQFKRU D
QHZ VHW RI VFDOHV $OO \RX QHHG WR GR LV SLFN RQH RI WKRVH URRWV DQG SOD\ D VFDOH †† DQ\ VFDOH \RX FKRRVH †† EHJLQQLQJ ZLWK WKDW QRWH 7KHQ QHZ FKRUGV FDQ EH LQWURGXFHG EDVHG RQ WKDW QHZ VFDOH DQG LWV DYDLODEOH PRGHV 0RGDO LQWHUFKDQJH
ZDV XVHG WR JUHDW HIIHFW E\ -RKQ &ROWUDQH RQ WKH DOEXP $ $/RYH 6XSUHPH ÷

&KURPDWLF 6OLGLQJ

0LOHV 'DYLV ZDV NQRZQ IRU D SDUWLFXODU NLQG RI VFDODU VXEVWLWXWLRQ LQ PRGDO PXVLF 7KH WHFKQLTXH LV FDOOHG ΔVOLGLQJ ÷ DQG LW LQYROYHV SOD\LQJ WKH H[DFW VFDOH \RX DUH XVLQJ FXUUHQWO\ RQO\ RQH KDOIVWHS XS RU GRZQ DQG WKHQ UHWXUQLQJ WR WKH VFDOH \RX ZHUH XVLQJ ,W LV D XVHIXO WHFKQLTXH IRU JHQHUDWLQJ WHQVLRQ DQG FUHDWLQJ QRYHO PHORGLF LGHDV

3RO\PRGDOLW\

:KDW SRO\WRQDO PXVLF LV WR WRQDO PXVLF SRO\PRGDO PXVLF LV WR PRGDO PXVLF 3RO\PRGDOLW\ LV WKH XVH RI PRUH WKDQ RQH VFDOH DW WKH VDPH WLPH WR DQFKRU WKH
KDUPRQ\ RI WKH SLHFH 2QH H[DPSOH FRPHV IURP -RKQ &ROWUDQH D VFDOH) PDMRU IRU LQVWDQFH LV XVHG DV WKH PRGDO FHQWHU RI DQ LPSURYLVDWLRQ EXW DW WKH YHU\
VDPH WLPH WZR RWKHU VFDOHV D PDMRU DERYH DQG EHORZ WKDW VFDOH DUH DOVR XVHG LQ WKLV FDVH $ PDMRU DQG & PDMRU 7KH VFDOHV DUH DOO XVHG WR FUHDWH PHORGLHV VRPHWLPHV RQH DIWHU DQRWKHU DQG VRPHWLPHV ZLWKLQ WKH VDPH SKUDVH &KRUGV DUH ERUURZHG IURP DOO RI WKH VFDOHV UHVXOWLQJ LQ D KDUPRQLF QHWZRUN WKDW LV FRPSOH[DQG DPELJXRXV

$WRQDOLW\

)LQDOO\ ZH DUULYH DW DWRQDO PXVLF $WRQDO PXVLF FDQ EH VHHQ DV RQH RI WZR WKLQJV

7KH QDWXUDO H[WHQVLRQ RI WRQDO KDUPRQ\ LQ ZKLFK SRO\WRQDOLW\ LV WDNHQ WR LWV OLPLW

7KH PRVW FRPSOHWH YHUVLRQ RI PRGDO KDUPRQ\ LQ ZKLFK WKH WRQH VFDOH LV WKH ΔPRGH ÿ EHLQJ XVHG

,Q WKH ILUVW ZD\ RI ORRNLQJ DW LW DWRQDOLW\ LV WKH GHQLDO RI WRQDOLW\ E\ ZD\ RI LWV PXOWLSOLFDWLRQ Δ$WRQDO ÿ PHDQV ΔZLWKRXW D NH\ FHQWHU ÿ EXW LW LV LMPRVVLEOH WR
FRQFHLYH RI PXVLF WKDW LV ZLWKRXW KDUPRQLF RUJDQL]DWLRQ LQ WKH VWUXFWHVW VHQVH
7KH OLPLW RI SRO\WRQDOLW\ KRZHYHU DSSURDFKHV WKH ODFN RI D NH\ FHQWHU E\ HVWDEOLVKLQJ VR PDQ\ VPDOO FHQWHUV WKDW WKH PXVLF QHYHU KDV D FKDQJH WR FRQJHDO DURXQG D VLQJOH WRQLF RU HYHQ D VHW RI WRQLFV

7KH VHFRQG ZD\ RI VHHLQJ DWRQDOLW\ LV VLPSOHU ‡ LW LV PRGDO PXVLF LQ ZKLFK DOO WRQHV DUH XVHG WR GHILQH WKH VFDOH EHLQJ XVHG 2Q WKLV PRGHO DWRQDO KDUPRQ\ VLPSO\ WUHDWV DOO WRQHV HTXDOO\ DQG GHPRFUDWLFDOO\ DOORZLQJ UHODWLRQVKLSV WR
HPHUJH EHWZHHQ WKHP DV WKH PXVLF SURJUHVVHV

,W LV LMPRUWDQW WR QRWH WKDW DWRQDO GRHV QRW PHDQ ZLWKRXW UXOHV 7KHUH LV VXFKD

WKLQJ DV IUHH PXVLF WR EH GLVFXVVHG EULHIO\ EXW IRU LQVWDQFH WKH WKURXJK
FRPSRVHG DWRQDO PXVLF RI WKH HDUO\ WR PLG[WK] &HQWXU\ RIWHQ FDOOHG ΔVHULDOLVP ֍

DQG SLRQHHUHG E\ 6FKRHQEHUJ DQG :HEHU DPRQJ RWKHUV ZDV D UXOH JRYHUQHG DV %DURTXH PXVLF DQG SHUKDSV DV PDWKHPDWLFDO DV ZHOO

&KURPDWLF 3OD\LQJ

7KH HDVLHVW ZD\ IRU PRVW SHRSOH WR DSSURDFK DWRQDO SOD\LQJ DQG FRPSRVLQJ LV WR WKLQN RI LW WKURXJK WKH FKURPDWLF VFDOH 6HHLQJ WKH FKURPDWLF VFDOH DV WKH
IRXQGDWLRQ RI WKH PXVLF UDWKHU WKDQ DQ\ RU QRWH VFDOH LV D ZD\ RI WUHDWLQJ DOO WRQHV GHPRFUDWLFDOO\ :KDW HPHUJHV RXW RI D VSDFH VXFK DV WKLV LV YHU\ PDQ\ VPDOOHU UHODWLRQVKLSV EHWZHHQ QRWHV DQG FKRUGV †† UHODWLRQVKLSV WKDW FDQ EH VHHQ
HLWKHU DV SRO\WRQDO RU DV PRGDO LQ WKH PRVW DEVROXWH VHQVH

,W LV ZRUWK SUDFWLFLQJ WKLV NLQG RI SOD\LQJ LQ ZKLFK WKH KDUPRQ\ RI WKH PXVLF LV UHVWUDLQHG RQO\ E\ RQH VFDOH DQG LQFOXGHV DOO RI WKH QRWHV RI :HVWHUQ KDUPRQ\ ,W VRXQGV DV WKRXJK WKLV VRUW RI PXVLF LV HDVLHU WR FRPSRVH RU LPSURYLVH EXW GRLQJ VR ZLWK DQ\ NLQG RI O\ULFLVP UHTXLUHV JUHDW VNLOO DQG DQ LPPHQVLYH HDU DQG GHPDQGV SUDFWLFH

2UQHWWH &ROHPDQ † +DUPRORGLFV

2UQHWWH &ROHPDQ SLRQHHUHG D ZD\ RI SOD\LQJ FKURPDWLFDOO\ WKDW HQGXUHV WR WKLV G D\ $OO WRQHV DUH WUHDWHG HTXDOO\ EXW UDWKHU WKDQ DWWHPSWLQJ WR FUHDWH
KDUPRQLF VWUXFWXUHV RXW RI WKRVH WRQHV LQ YDULRXV FRPELQDWLRQV WKH KDUPRQ\ LV OHIW HQWLUHO\ XS WR WKH PHORG\ 7KLV LV FDOOHG KDUPHORGLFV DQG ZKDW LW PHDQV LV
WKDW WKH PHORGLF IXQFWLRQ RI D QRWH RU FKRUG LV ZKDW GHWHUPLQHV LWV YDOXH LWV
KDUPRQLF YDOXH UDWKHU WKDQ IRU LQVWDQFH LWV UHODWLRQVKLS ZLWKLQ D FKRUG RU VFDOH

5DWKHU WKDQ VHHLQJ KDUPRQ\ DV VRPHWKLQJ IUR]HQ LQ WLPH D UHODWLRQVKLS EHWZHHQ WRQHV LQ DEVWUDFW FROOHFWLRQV RI QRWHV KDUPHORGLFV VHHV WKH UHODWLRQVKLS EHWZHHQ
QRWHV LQ WLPH DV WKH\ PRYH XS DQG GRZQ DQG DUH KHOG IRU ORQJHU RU VKRUWHU DPRXQWV RI WLPH DV SDUW RI WKRVH QRWHV ‡ KDUPRQ\ IXQFWLRQ &ROHPDQ ZDV D IDQ RI VD\LQJ WKDW KDUPHORGLFV ZDV DOO DERXW WUHDWLQJ WKH PHORG\ KDUPRQ\ DQG UK\WKP HTXDOO\ UDWKHU WKDQ SULYLOHJLQJ KDUPRQ\

)UHH +DUPRQ\

,QIUHH PXVLF WKLQJV DUH XQOLNH DQ\ZKHUH HOVH :H KDYH DOUHDG\ VDLG WKDW DWRQDO PXVLF GRHV QRW PHDQ PXVLF ZLWKRXW UXOHV EXW LQ IUHH PXVLF WKDW ¶V H[DFWO\ ZKDW LW
PHDQV 7KHUH DUH LQ IDFW QR UXOHV DW DOO LQ IUHH KDUPRQ\

(YHU\ PXVLFDO VWUXFWXUH ++ IURP WKH 0RRQOLJKW VRQDWD WR WKH VRXQGV RI D
WUDLQ\DUG ++ DUH DOORZHG LQ ,Q D VOLJKWO\PRUH UHVWULFWHG YHUVLRQ IUHH KDUPRQ\
PHDQV WKDW DQ\ RI WKH QRWHV FDQ EH SODFHG DW DQ\ WLPH ZLWKRXW QHFHVVDULO\
EHLQJ FRQFHUQHG DW DOO DERXW WKHLU KDUPRQLF FRQWHQW

)UHH PXVLF LV VR IDU UHPRYHG IURP WUDGLWLRQDO QRWLRQV RI KDUPRQ\ WKDW LQ IDFW
PRVW IUHH PXVLFLDQV GLVWDQFH WKHPVHOYHV IURP WKH ΔMD]] ÷ QDPH WDJ LQVLVWLQJ RQ
EHLQJ FDOOHG ΔIUHH LPSURYLVHUV ÷ LQVWHDG 7KLV LV DQ H[WHQVLRQ EH\RQG HYHQ WKH
ODWH PRGDO PXVLF RI &ROWUDQH DQG WKH IUHH MD]] RI &ROHPDQ ,W LV RIWHQ LQIOXHQFHG
E\ WKRVH WKLQJV DV ZHOO DV E\ODWH 0LOHV 'DYLV DQG WK FHQWXU\ FODVVLFDO PXVLF
EXW LW LV QRW LGHQWLFDO ZLWK DQ\ RI WKHP 0RVW SUDFWLWLRQHUV RI IUHH PXVLF LQ LWV
SXUHVW VHQVH DUH DOVR SODHUV RI VRPH RWKHU PRUH WUDGLWLRQDO PXVLF VXFK DV MD]] URFN RU FODVVLFDO EXW LQ WKH VSDFH RI IUHH LPSURYLVDWLRQ WKRVH QDPHV PHDQ UHODWLYHO\OLWWOH LQ WKHRU\

%H\RQG +DUPRQ\ 0HORG\ DQG 5K\WKP

)UHH PXVLF HVWDEOLVKHV D VSDFH LQ ZKLFK WUDGLWLRQDO PXVLFDO VWUXFWXUHV DUH QR
ORQJHU GRPLQDQW 7KH FRPSRVHU RU SHUIRUPHU LV DOORZHG WR PRYH EH\RQG
KDUPRQ\ PHORG\ DQG UK\WKP DQG LQWR RWKHU VRQLF WHUULWRULHV 7KHVH LQFOXGH WLPEUH WRQH YROXPH DQG PXVLFDO GHQVLW\

,W LV QRW XQFRPPRQ IRU D IUHH SODHU RU DQ\ DYDQWJDUGH RU H[SHULPHQWDO
PXVLFLDQ ZKR HPEUDFHV WKLV PXVLF VSDFH WR WKLQN DQG IHHO WKRVH PXVLFDO
SURSHUWLHV UDWKHU WKDQ FRQFHUQLQJ WKHPVHOYHV DW DOO ZLWK WKH WUDGLWLRQDO VWUXFWXUHV
ZH DUH XVHG WR 7KLV PRYHV VXFK FRPSRVHUV DQG SHUIRUPHUV HYHQ IXUWKHU IURP WKH WUDGLWLRQV RI URFN MD]] DQG FODVVLFDO PXVLF DQG LQWR QHZ DUHDV ZKLFK PDQ\

OLVWHQHUV ILQG GLIILFXOW WR HQFRXQWHU EXW VRPH SODQHUV ILQG H[FHSWLRQDOO\
UHZDUGLQJ

6SLULWXDOLW\ DQG 0XVLF 7KHRU\

,W PD\ VHHP VWUDQJH WR PRYH EH\RQG WRQDOLW\ DQG HYHQ EH\RQG KDUPRQ\
DOWRJHWKHU %XW WKHUH LV D ORQJ WUDGLWLRQ LQ DYDQWJDUGH H[SHULPHQWDO DQG IUHH
PXVLF RI ORIW\ UHDVRQV IRU GRLQJ VR ,Q WKH H[SHULPHQWDO FODVVLFDO WUDGLWLRQ IRU LQVWDQFH DV LQ PXFK RI WKH IUHH LPSURYLVDWLRQ VLQFH WKH PXVLF WKHRU\ LV WLHG GLUHFWO\ WR SKLORVRSK\ 7KLQNLQJ DERXW WKH PHWDSK\VLFDO DQG RWKHU SKLORVRSKLFDO UDPLILFDWLRQV RI SOD\LQJ PXVLF WDNHV WKH SODFH RI WKLQNLQJ DERXW KDUPRQ\ RU PHORG\ ZLWK VRPH RI WKH MH SOD\HUV DQG FRPSRVHUV VXFK DV -RKQ &DJH DQG 'HUHN %DLOH\ HYHQ SXEOLVKLQJ SKLORVRSKLFDO ERRNV DQG HVVD\V OLQNLQJ WKHLU ZRUN WR GHHS SKLORVRSKLFDO WKHPHV
7KHUH LV DQRWKHU WUDGLWLRQ FORVHO\ UHODWHG FRPLQJ RXW RI VMD]] IURP 2UQHWWH &ROHPDQ 6XQ 5D &HFLO 7D\ORU -RKQ &OWUDQH 3KDUDRK 6DXQGHUV DQG $OEHUW $\OHU 7KLV WUDGLWLRQ UHSODFHV PXVLF WKHRU\ DV LW KDV EHHQ NQRZQ IRU FHQWXULHV ZLWK VSLULWXDO UHIOHFWLRQ DQG UHOLJLRXV FRPPLWPHQW
7KHVH SOD\HUV VRPH RI WKHP DW OHDVW ZHUH ZHOO NQRZQ IRU VHHLQJ WKHLU PXVLF DV GLUHFW OLQHV WR GLYLQLW\ PXFK WKH VDPH ZD\ WKDW PXVLF IXQFWLRQV LQ VRPH
P\VWLFDO WUDGLWLRQV RXWVLGH RI WKH PRGHUQ :HVW &RQWHPSRUDU\ VSLULWXDO DWRQDO
DQG IUHH PXVLFLDQV KDYH FRQWLQXHG WKLV WUDGLWLRQ RIWHQ OLQNLQJ SKLORVRSK\
VSLULWXDOLW\ UHOLJLRQ DQG HYHQ VFKRODUVKLS GLUHFWO\ WR WKH SUDFWLFH DQG WKHRU\ RI
WKHLU PXVLF 7KLV PHDQV WKDW IRU WKHVH SOD\HUV WKH QHZ PXVLF WKHRU\ LV
LQWHOOHFWXDO DQG VSLULWXDO LQ QDWXUH UDWKHU WKDQ PDWKHPDWLFDO

7KHRU\ QR ORQJHU DSSHDUV RQ WKH SDJH DQG LW QR ORQJHU FRQFHUQV LWVHOI ZLWK WKH VRUWV RI WKLQJV ZH KDYH EHFRPH DFFXVWRPHG WR WKLQNLQJ DERXW 7KLV VRUW RI WKHRU\ LV ERXQGOHVV DQG SRLQWV WRZDUG D IXWXUH LQ ZKLFK PXVLF ZLOO QRW OLYH RQO\ RQ WKH SDJH GLG LW HYHU"

$ 1RWH IURP WKH $XWKRU

7KDQN \RX IRU UHDGLQJ WKLV ERRN , KRSH \RX HQMR\HG UHDGLQJ LW DV PXFK DV , HQMR\HG SXWWLQJ LW WRJHWKHU

, KDYH RQO\ RQH UHTXHVW LI \RX IHHO OLNH WKLV ERRN KHOSHG \RX LQ DQ\ ZD\ LW ZRXOG EH JUHDWO\ DSSUHFLDWHG LI \RX FRXOG WDNH D PRPHQW WR ZULWH D TXLFN KRQHVW UHYLHZ RQ $PD]RQ 5HYLHZV DUH LMPHQVHO\ LPSRUWDQW WR LQGHSHQGHQW VHOI SXEOLVKHG DXWKRUV DQG JUHDWO\ KHOS XV JHW PRUH ERRNV LQ IURQW RI PRUH UHDGHUV ,I \RX GLGQ 't W OLNH LW WKDW 's ILQH WRR -XVW OHDYH DQ KRQHVW UHYLHZ WKDW 's DOO , DVN

'URS PH D UHYLHZ RQ $PD]RQ FRP

7KLV ZLOO QRW RQO\ KHOS RWKHUV ILQG DQG EHQHILW IURP WKLV ERRN EXW LW LV DOVR H[WUHPHO\ KHOSIXO DQG UHZDUGLQJ WR PH WR NQRZ KRZ PXFK WKLV ERRN KDV
EHQHILWHG RWKHUV DV ZHOO DV WR OHDUQ DQ\ZD\V, FDQ LPSURYH

$OVR LI \RX ZLVK WR VWD\ LQ WRXFK \RX FDQ YLVLW P\ ZHEVLWH DW
ZZZ JXLWDU\RXUGD\ FRP DQG VXEVFULEH WR P\ HPDLO OLVW , YHU\ UDUHO\ VHQG RXW HPDLOV EXW ZKHQ , GR LW 't V RQO\ EHFDXVH , KDYH VRPHWKLQJ FRRO WR VKDUH

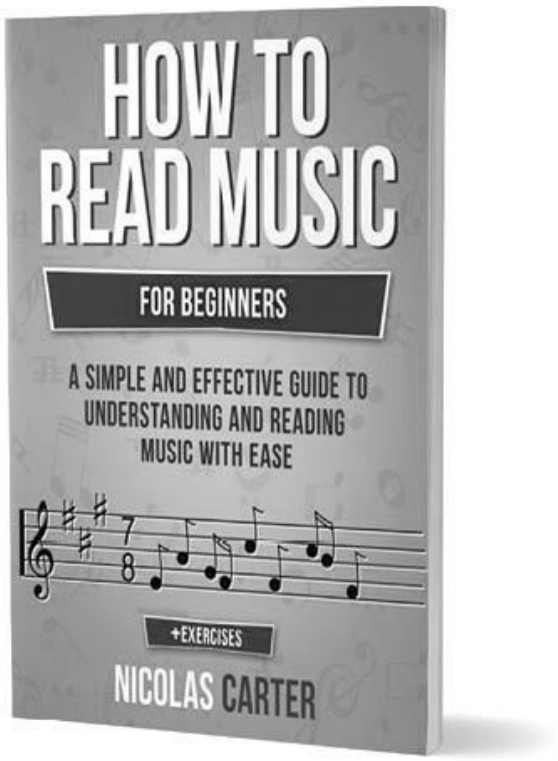
5HPHPEHU WR NHHS SUDFWLFLQJ DQG EH GLVFLSOLQHG DOZD\V ZRUN RQ H[SDQGLQJ \RXU NQRZOHGJH DQG EHFRPLQJ WKH EHWWHU \RX /HDUQ WR HQMR\ WKH SURFHVV DQG HYHU\WKLQJ WKDW\RX GR HYHQ WKH VLPSOHVW VPDOOHVW WKLQJV 7KLV ZLOO JLYH\RX WKH UHVXOWV\RX ZDQW DQG LW ZLOO OHDG WR VRPHWKLQJ WUXO\JUHDW

:LVK \RX ORYH DQG MR\

1LFRODV

2WKHU %RRNV E\ 1LFRODV

+RZ WR 5HDG 0XVLF

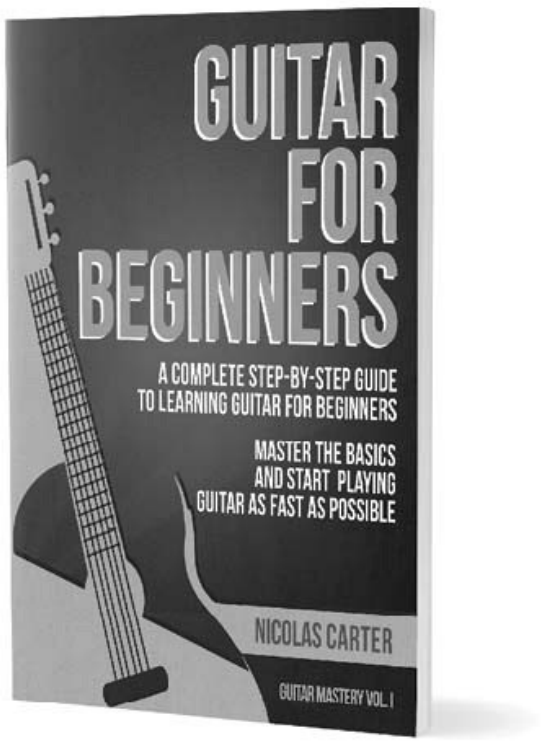


$ 6LPSOH DQG (IIHFWLYH *XLGH WR 8QGHUVWDQGLQJ DQG 5HDGLQJ 0XVLF ZLWK (DVH

0XVLF 7KHRU\ 0DVWHU\ %RRN

ZZZ DPD]RQ FRP GS % - +15

*XLWDU IRU %HJLQQHUV

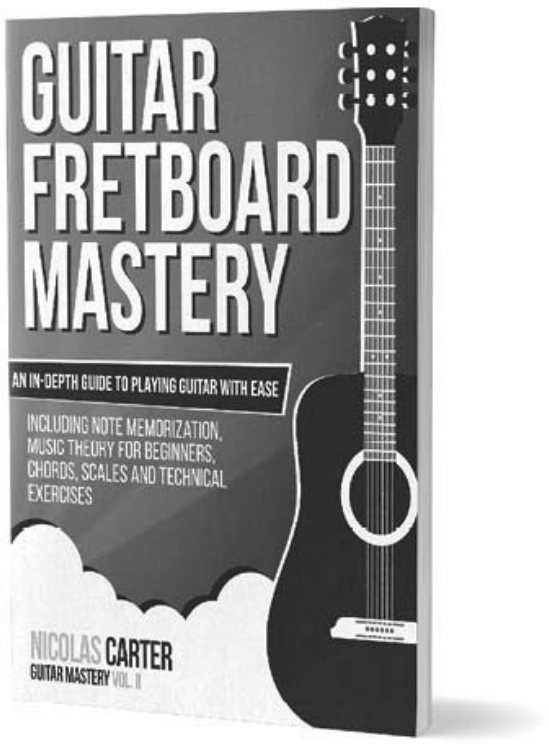


*XLWDU 0DVWHU\9ROXPH,

$&RPSOHWH6WHS%\6WHS*XLGHWR/HDUQLQJ*XLWDU IRU%HJLQQHUV

ZZZ DPD]RQ FRP GS % ;' /=0

*XLWDU)UHWERDUG 0DVWHU\

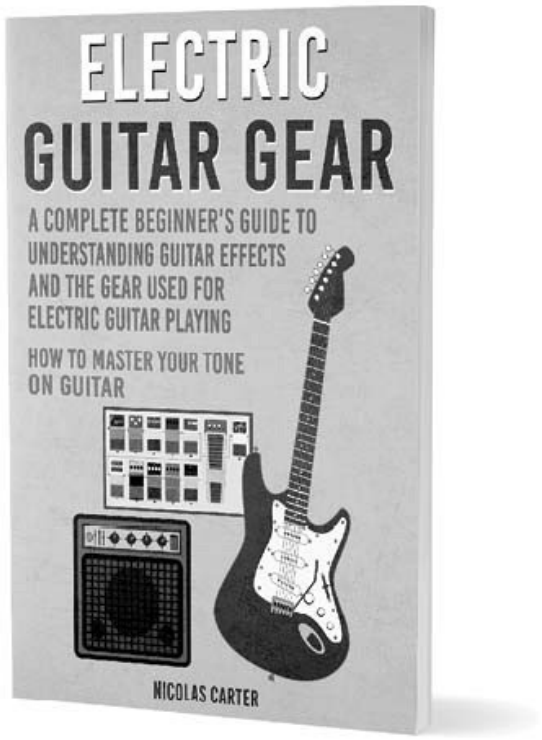

GUITAR
FRETBOARD
MASTERY
AN IN-DEPTH GUIDE TO PLAYING GUITAR WITH EASE
INCLUDING NOTE MEMORIZATION, MUSIC THEORY FOR BEGINNERS, CHORDS, SCALES AND TECHNICAL EXERCISES
NICOLAS CARTER
GUITAR MASTERY VOL. II

*XLWDU 0DVWHU\ 9ROXPH ,,

$Q ,Q 'HSWK *XLGH WR 3OD\LQJ *XLWDU)UHHO\

ZZZ DPD]RQ FRP GS % $.,0

(OHFWULF *XLWDU *HDU

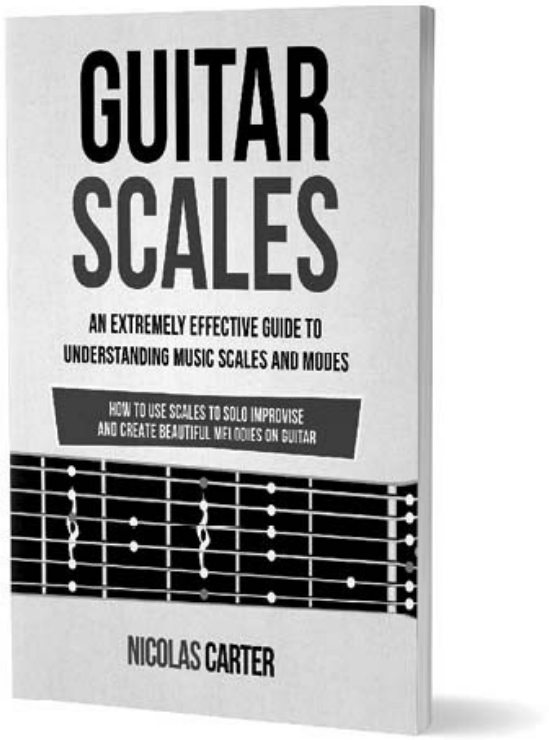

ELECTRIC
GUITAR GEAR
A COMPLETE BEGINNER'S GUIDE TO UNDERSTANDING GUITAR EFFECTS AND THE GEAR USED FOR ELECTRIC GUITAR PLAYING
HOW TO MASTER YOUR TONE ON GUITAR
NICOLAS CARTER

*XLWDU 0DVWHU\ 9ROXPH ,,,

$ &RPSOHWH %HJLQQHU ¹V *XLGH 7R 8QGHUVWDQGLQJ *XLWDU (IIHFWV $QG 7KH *HDU 8VHG)RU (OHFWULF *XLWDU 3OD\LQJ +RZ 7R 0DVWHU <RXU 7RQH 2Q *XLWDU

ZZZ DPD]RQ FRP GS % &;&+ 6

*XLWDU 6FDOHV



$Q ([WUHPHO\ (IIHFWLYH *XLGH 7R 8QGHUVWDQGLQJ 0XVLF 6FDOHV DQG 0RGHV

ZZZ DPD]RQ FRP GS % *= '

.DL]HQ

7KH $UW RI &RQWLQXRXV /LH ,PSURYHPHQW +RZ WR &UHDWH D /DVWLQJ &KDQJH 2QH 6WHS DW D 7LPH

$V WKH WLWOH VXJJHVWV WKLV ERRN LV DOO DERXW WKH ZD\V \RX FDQ WKH DUW RI .DL]HQ WR LPSURYH \RXU HYHU\GD\ OLIH DQG DFKLHYH VLJQLILFDQW JRDOV

3RZHUIXO 0HGLWDWLRQ 7HFKQLTXHV

$ %HJLQQHU)ULHQGO\ 0HGLWDWLRQ *XLGH IRU 0LQGIXOQHVV 6WUHVV 5HOLHI 6HOI ,PSURYHPHQW DQG %HFRPLQJ D %HWWHU 9HUVLRQ RI <RXUVHOI

<RX FDQ DOVR YLVLW WKH DXWKRU ¹V SURILOH DW DPD]RQ FRP DXWKRU QLFRODVFDUWHU RQ
$PD]RQ IRU PRUH DZHVRPH ERRNV

&KHDW 6KHHW

0DMRU 6FDOH LQ $OO .H\V

KEY	T	T	S	T	T	T	S
1	2	3	4	5	6	7	8
C	D	E	F	G	A	B	C
G	A	B	C	D	E	F#	G
D	E	F#	G	A	B	C#	D
A	B	C#	D	E	F#	G#	A
E	F#	G#	A	B	C#	D#	E
B	C#	D#	E	F#	G#	A#	B
F	G	A	Bb	C	D	E	F
Bb	C	D	Eb	F	G	A	Bb
Eb	F	G	Ab	Bb	C	D	Eb
Ab	Bb	C	Db	Eb	F	G	Ab
Db	Eb	F	Gb	Ab	Bb	C	Db
Gb	Ab	Bb	Cb	Db	Eb	F	Gb
C#	D#	E#	F#	G#	A#	B#	C#
G#	A#	B#	C#	D#	E#	F##	G#
D#	E#	F##	G#	A#	B#	C##	D#
A#	B#	C##	D#	E#	F##	G##	A#
F#	G#	A#	B	C#	D#	E#	F#

0DVWHU WKH ,QWHUYDOV

(! & DVFHQGLQJ ♯ PLQRU[WK]

(! & GHVFHQGLQJ 0 ♯DMRU[UG]

' ! $ DVFHQGLQJ †† PLQRU^WK`

' ! %E GHVFHQGLQJ 0 ††DMRU^UG`

*E ! $E †† PLQRU ^WK`

306 ([HUFLVH

* 'RULDQ 306 † LV) 0DMRU

) 0L[RO\GLDQ 306 † LV % 0DMRU

(3KU\JLDQ 306 † LV & 0DMRU

$ $HROLDQ 306 † LV & 0DMRU

* /\GLDQ 306 † LV ' 0DMRU

' /RFULDQ 306 † LV (E 0DMRU

% ,RQLDQ 306 † LV % 0DMRU

'E 0L[RO\GLDQ 306 † LV *E 0DMRU

%DU 6HTXHQFH ([HUFLVH

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DQG H DQG D H DQG D H DQG D

^WK` †^WK` †^WK` † ^WK`† ^WK`† ^WK` †^WK` †^WK` † ^WK` ^WK` ^WK`

1RWHVWKDWIDOORQHDFKEHDW DUHEROGHG

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DQG H DQG D H DQG D H DQG D

^WK` ^WK` †^WK` † ^WK`† ^WK`† ^WK` †^WK` † ^WK` † ^WK` † ^WK` ^WK` ^WK`

%DU

WULSOHW WULSOHW HDQG D H DQGD

WK 7ULSOHWV 7 WK †ULSOHWV † WK † WK † WK † WK † WK WK

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H DQG D H DQG D H DQG D H DQG D

† WK †† WK † WK † WK † WK † WK † WK † WK †† WK WK WK

%DU 6HTXHQFH ([HUFLVH

%DU

___H__DQG_D___H_DQGD__WULSOHW___H_DQGD

WK UHVW † WK † WK UHVW † WK † WK VWQF WULSOHWV † WK UHVW † WK † WK

%DU

__DQG__HDQGD__HDQG D ___H_DQGD

WK UHVW † WK † WK UHVW † WK † WK † WK UHVW † † WK † WK UHVW † WK † WK

%DU

__WULSOHW__WULSOHW__HDQG D ___H_DQGD

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%DU

__HDQG D ___H_DQGD___H_DQG D __H DQG D

WK UHVW † † WK † WK UHVW † † WK † WK UHVW † † WK UHVW † WK